FACULTY OF INFORMATION TECHNOLOGY

BRNO UNIVERSITY OF TECHNOLOGY

Annual Report 2007

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ANNUAL REPORT 2007

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I. INTRODUCTION

Brno University of Technology (BUT) is the second largest and the second oldest technical university in the Czech Republic. It was founded in **1849** for technical, agricultural and commercial specialization. The languages of instruction were Czech and German. As a consequence of political and national disputes, Czech ceased to be used as language of tuition and in **1899 the Czech High Technical School** was founded in Brno**.** After World War I and the foundation of Czechoslovakia, the school merged with the German Technical High School (originally bilingual) to form the High Technical School in Brno, which later carried the name of Dr. Edvard Beneš, the second president of Czechoslovakia. In the period between World War I and World War II this school ranked among the best technical universities in Europe.

During World War II the school was, just as all other high schools, closed and the premises were used by German military institutions, and most equipment was destroyed. Immediately after the end of World War II the activities of the school were resumed. In 1951, the Technical High School was closed and the departments became parts of the newly established Military Technical Academy. Tuition for civilians continued at the former faculty of civil engineering only. However, it soon became evident that the technical university should be re-established. In 1956 the school gradually started its activities in various fields.

The Faculty of Information Technology (FIT) at Brno University of Technology was established on 1st January 2002 from the former Department of Computer Science and Engineering, Faculty of Electrical Engineering and Computer Science, Brno University of Technology. **The Department of Computer Science and Engineering (DCSE)** was established in 1964. Further development of the Department was related to the dynamic development in the area of computer science and its applications, called informatics. The ever-increasing demands on specialists in this area determined the extent and orientation of the teaching, research tasks and joint projects and they also influenced the increase in number of students and staff of the Department. The increasing importance of teaching informatics at the faculty brought a transformation to the **Faculty of Electrical Engineering and Computer Science (FEECS)** in 1993 and separation of the computer science study plans from the rest not later than after the 1st semester of the common study programme.

At the end of the millenium the importance of the DCSE and the ratio of informatics in teaching exceeded the organizational, technical and financial limits so that the transformation of the DCSE into a new faculty could be launched.

A number of historical decisions were taken at the FEECS in 2001 in connection with the planned foundation of a new **Faculty of Information Technology (FIT)** and transformation of the **Faculty of Electrical Engineering and Computer Science (FEECS)** into the **Faculty of Electrical Engineering and Communication (FEEC).** The Academic Senate of BUT approved the establishment of the faculty to 1st January 2002. The uneasy task of working out new study programmes for both faculties for accreditation was crowned by an

approval of new study programmes for both faculties by the Accreditation Board of the Ministry of Education of the Czech Republic and its consent with the foundation of the new faculty. In case of the FIT it was a three-year Bachelor's study programme, and a follow-up two-year Master's study programme.

In 2007, BUT was directed by **Prof. Ing. Karel Rais, CSc., MBA.**

Doc. Dr. Ing. Petr Hanáček, Head of the Department of Intelligent Systems, was another significant leading personality of BUT coming from our faculty – he was the Vice-Chairman of the Academic Senate of Brno University of Technology (AS BUT) and the Chairman of the Chamber of Academic Staff and at the same time worked as a member of the Economic Committee of the AS BUT. Another representative of the FIT in the AS BUT, **Doc. Ing. Jiří Kunovský, CSc.**, from the Department of Intelligent Systems, worked in the Pedagogical Committee of the AS BUT .

Jakub Mahdal, **Bc.,** a student of the follow-up Master's study programme, worked as a representative of the Student's Chamber of the AS BUT and as a member of the Economic Committee of the AS BUT.

Prof. Ing. Tomáš Hruška, CSc., Prof. RNDr. Milan Češka, CSc. a **Prof. Ing. Jan M. Honzík, CSc.** were members of the Scientific Board of BUT.

In 2007, **Prof. Ing. Tomáš Hruška, CSc.**, the Dean, directed the FIT together with five Vice-Deans. The Vice-Deans were in charge of research and creative activities, international and external relations and campus development in co-operation with the relevant Dean's Office Departments. The Research Board, the Pedagogical Council and the Disciplinary Board are autonomous academic bodies. Dean's advisory boards are the following: Dean's Collegium, Study Programme Council, Creative Project Board, Information System Board and Library Board. The Faculty Secretary was responsible for the finance, operation and development of the faculty together with the individual sections of the Dean's Office. In 2007, there was a teaching staff of 57 members and there were 2507 students in all state-supported study programmes.

The faculty management in 2007:

Prof. Ing. Tomáš Hruška, CSc.	Dean
Prof. RNDr. Milan Češka, CSc.	Vice-Dean, Science and Research
Prof. Ing. Jan M. Honzík, CSc.	Vice-Dean, Public Relations
	Acting Dean
Doc. Ing. Vladimír Drábek, CSc.	Vice-Dean, Education
Ing. Miloš Eysselt, CSc.	Vice-Dean, Students Affairs
Ing. Zdeněk Bouša	Vice-Dean, Campus Development

Ing. Zdeněk Bouša worked as the Faculty Secretary. **Doc. Ing. Jaroslav Zendulka, CSc.**, Head of the Department of Information Systems, was the Chairman of the Academic Senate of the FIT. **Ing. Petr Lampa**, Head of the Computer Centre FIT BUT, was the first Vice-Chairman of the Academic Senate of the FIT BUT and , at the same time, the Chairman of the Academic Chamber of the FIT BUT.

Zdeněk Letko, Bc., a student, worked in the position of the second Vice-Chairman of the Academic Senate of the FIT, and, at the same time, in the position of the President of the Student Union FIT BUT. **Doc. Ing. Josef Schwarz, CSc.,** worked as a Trade Union representative in the management of the faculty.

In its sixth year of existence, the faculty consisted of four departments and the Computer Centre:

- Department of Information Systems (DIFS)
- Department of Intelligent Systems (DITS)
- Department of Computer Graphics and Multimedia (DCGM)
- Department of Computer Systems (DCSY)
- Computer Centre (CC)

In 2007, the FIT continued tuition in the below-mentioned Master's study programmes of **Electrical Engineering and Computer Science (EI)**, registered in 1999 according to University Education Act. These running out study programmes continued until the end of the academic year 2006/2007. In 2007, the FIT also provided tuition in the **Ph.D. study programmes - Information Technology (DIT) and Computer Science and Engineering (CSE).** 2007 was the sixth year of the existence of **Information Technology (BIT),** a **Bachelor's study programme,** which was introduced to the faculty in 2002/2003.

In 2007, first 101 students graduated from the follow-up **Master's study programme - Information Technology (MIT)**. The new study programmes correspond to the Bologna Declaration on the Development of Higher Education in Europe and their structure of studies is fully compatible within Europe.

Study programmes taught at the FIT in 2007:

Follow-up Master's study programme: Electrical Engineering and Computer Science
Nominal length of study: 3 years
Line of study: Computer Science and Engineering (VTN)

Master's study programme: Electrical Engineering and Computer Science
Nominal length of study: 5 years
Line of study: Computer Science and Engineering (CSE)

Bachelor's study programme: Information Technology
Nominal length of study: 3 years
Line of study: Information Technology (BIT)

A follow-up Master's study programme: Information Technology with a nominal length of 2 years was launched at the FIT in 2005/2006 with the following lines of study:

- Information Systems (MIS)
- Computer Graphics and Multimedia (MGM)
- Intelligent Systems (MIN)
- Computer Systems and Networks (MPS)

A new doctoral study programme :
Nominal length of study: *4 years (internal form of study)*
Line of study: Computer Science and Engineering (CSE)

A follow up doctoral study programme:
Nominal length of study: 3 years (internal form of study)
Line of study: Information Technology (DIT)

In 2007, 267 Bachelors, 186 students of the Master's study programme graduated at the FIT BUT and 10 students completed the Ph.D. study programme. 624 new students entered the first year of the regular Bachelor's study programme, 281 students entered the follow-up Master's study programme, and 54 students entered the postgraduate doctoral study, 46 of them in the internal form, and 8 of them in the combined form of study.

In 2007, 60 foreign students studied at the FIT BUT within the LLP Erasmus mobility programme.

In 2007, two habilitation proceedings for the title of "Docent" (Associate Professor) and one habilitation procedure for professorship started and Doc. Ing. Tomáš Vojnar, Ph.D. successfully completed the habilitation proceedings for the title of "Docent" (Associate Professor).

The most significant events and activities that influenced the life at the faculty in 2007 were the following:

- 12th January 2007 - Open Day at the FIT BUT,
- 19th January 2007 - organization of a meeting of former members/workers of ÚIVT (FIT) at the faculty,
- 1st February 2007 - the traditional FIT/FEEC ball, a high-level and well-organized event which took place in International Hotel,
- 21st – 23rd February 2007 - participation in "Knowledge 2007" conference, Ostrava
- 28th March 2007 - organization of an event called *Why not go and do science at FIT?* with the aim of engaging students in research projects, increasing students' awareness of research taking place at the FIT, catching students' interest in doctoral studies, and showing students the links between their studies, research and professional life,
- 28th March 2007 - organization of the third Open Day for those interested in doctoral study programmes at the FIT BUT,
- 11th -13th April 2007 - participation in 10th IEEE Workshop on Design and Diagnostics of Electronic CircDITS and Systems, Krakow,
- 23rd – 25th April 2007 - co-organization of the ISIM 2007 Conference (Information Systems Implementation and Modelling 2007), Hradec nad Moravicí, FIT BUT being the main organizer,
- 23rd – 25th April 2007 - co-organization of WFM 2007 (1st International Workshop on Formal Models), Hradec nad Moravicí,
- 24th – 25th April 2007 - participation in 7th International Conference Radioelektronika 2007, Brno,
- 24th – 26th April 2007 - co-organization of MOSIS 2007 (Modelling and Simulation of Systems), Rožnov pod Radhoštem,
- 26th April 2007 - co-organization of STUDENT EEICT 2007 conference, the main organizer being the Faculty of Electrical Engineering and Communications, Brno University of Technology,

- 26th – 28th April 2007 - participation in Spring Conference on Computer Graphics, Budmerice, Slovakia,
- 9th – 11th May 2007 - participation in FELAPO 2007 Conference, Bojnice,
- 9th – 12th May 2007 - participation in 4th International Conference on Informatics in Control, Automation and Robotics, Angers,
- 20th – 22th June 2007 - participation in ACM Symposium on Access Control Models and Technologies NIce-Sophia Antipolis,
- 12th – 15th July 2007 - participation in 4th International Conference on Cybernetics and Information Technologies, Systems and Applications, Florida,
- 5th – 8th August 2007 - Participation in NASA/ESA Conference on Adaptive Hardware and Systems, Edinburgh,
- 28th August – 2nd September 2007 - participation in New Horizons in Industry Business and Education 2007, a conference held in Rhodos, Greece,
- 4th – 6th September 2007 - participation in XVI International Conference on Systems Science: ICSS 2007, Wroclaw,
- 9th – 13th September 2007 - participation in 6th EUROSIM Congress on Modelling and Simulation Ljubljana,
- 12th – 13th September 2007 - annual Scientific Conference of the FIT BUT – a session held on the occasion of 6th anniversary of the foundation of the FIT BUT, Luhačovice,
- 18th – 20th September 2007 - co-organization of ASIS 2007 (29th International Autumn Colloquium Advanced Simulation of Systems), Sv. Hostýn,
- 10th – 12th October 2007 - participation in 2nd IFIP Central and Eastern European Conference on Software Engineering Techniques - SET 2007, Poznaň,
- 25th – 26th October 2007 - CSEW 2007 (Computer Science Education Workshop) - a meeting of Czech and Slovak departments and faculties involved in computer science, Nová Bystřice, Peršlák,
- 28th October 2007 co-organization of MEMICS 2007Conference (3rd Doctoral Workshop on Mathematical and Engineering Methods in Computer Science), Znojmo,
- 17th October 2007 - elections of members of the Academic Senate of the FIT BUT,
- 17th October 2007 - by-elections for the Academic Senate BUT,
- 30th October 2007 - constituent session of the Academic Senate of the FIT BUT – a call for a candidate election for the Dean's office in 2008 - 2011,
- 30th October – 2nd November - participation in the GAUDEAMUS 2007 trade fair and presentation of the FIT and its study programmes,
- 1st November 2007 - a series of lectures and call for a new Imagine Cup Competition,
- 10th – 11th November 2007 - The finals of "Baltazar a Baltík", the national programming competition held at the FIT BUT, was organized by SGP s.r.o. and Ing. Soukup, with a contribution of the FIT. Prof. Ing. Jan M Honzík, CSc. handed over valuable prizes to the finalists at the closing ceremony,
- 15th November 2007 - an opening ceremony related to the second stage of the 'Reconstruction and building of Božetěchova 1 and 2 campuses' was held
- 22nd November 2007 - an assembly of the academic community – an introduction of candidates for the Dean's office,
- 27th November 2007 - the candidate election for the Dean's office, Doc. Ing. Jaroslav Zendulka, CSc. was elected by the Academic Senate of the FIT BUT,

- 8th December 2007 - the finals of "Filuta 2007", a competition in programming for secondary school students, and the finals of "Girls for Computers and Computers for Girls" (Holky pro počítač a počítač pro holky) competition for secondary school female students. The prize awarding accompanied by public presentation of the best essays took place at the FIT BUT campus,
- 11th – 12th December 2007 - participation in 2007 NIST, Language recognition evaluation workshop, Orlando, US,
- 12th December 2007 - an opening ceremony related to the FIT Library,
- Work on the innovation of the "Long-Term Plan of Development of BUT"
- Activities of the pedagogical staff of the FIT related to the new study programmes,
- 6 new GACR (Grant Agency of the Czech Republic) projects (3 standard and 3 postdoctoral ones) were accepted in 2007, the total number of GACR projects at the faculty being 16 (8 standard, 1 doctoral and 7 postdoctoral projects),
- 10 new FRVS (Higher Education Development Fund) projects were accepted, 7 EU projects (5 MSMT projects and 2 MSMT research intentions), 4 Ministry of Industry and Trade projects, 1 Academy of Science CR project and 2 MSMT research projects,
- Experts from the FIT participated in the evaluation of exhibits for the "Cristal Disc" award at INVEX trade fair,
- Participation in IEEE Conferences, e.g.: 14th Annual IEEE International Conference and Workshop on the Engineering of Computer-Based Systems, Tuscon, Arizona, USA, March. 2007, 32nd IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Honolulu, April 2007,
- Ongoing co-operation with the Ministry of Defence in the field of security technologies and automatic speech processing, including the organization of some significant seminars,
- Activities of Doc. Ing. Vladimír Drábek, CSc., Vice-Dean, and his colleagues resulting in automated assessment of written entrance examinations,
- Activities of Prof. Ing. Jan M. Honzík, CSc., Vice-Dean for Public Relations, in LLP Erasmus and other European mobility programmes,
- Activities linked with the Bachelor's study programme ''Information Technology'', a part of MSMT programmes, especially preparatory work for the accreditation of the distance form of this programme, under Prof. Ing. Jan M. Honzík, CSc. charge,
- Activities of the AS FIT BUT members, namely Doc. Ing. Jaroslav Zendulka, CSc., Ing. Petr Lampa, Ing. Bohuslav Křena, Ph.D., and Zdeněk Letko, related to the organization, development and economic interests of the faculty,
- Activities of the AS FIT BUT members, namely Doc. Ing. Jaroslav Zendulka, CSc., Ing. Petr Lampa, Ing. Bohuslav Křena, Ph.D., and Zdeněk Letko, related to the organization, development and economic interests of the faculty,
- Activities of the pedagogical staff connected with information sessions at different types of secondary schools,
- The second stage of the 'Reconstruction and building of Božetěchova 1 and 2 campuses', i.e. the reconstruction of Carthusian monastery and building of the lecture hall centre II. was completed,
- Improvement of the student´s part of the FIT Information System and development of the staff´s part of the FIT Information System.

Significant Awards in 2007:

The Gold BUT Medal was awarded to **Prof. Ing. Jan M. Honzík, CSc.** for his contribution to the development in the field of Higher Education.

The **Silver BUT Medals** were awarded by **the Rector** of BUT to **Ing. Petr Schwarz, Ing. Pavel Matějka and Ing. Lukáš Burget, Ph.D.** for outstanding results in research and application of automatic speech recognition, especially language recognition and speaker recognition.

The Rector's Prize was awarded to **Ing. Martin Žádník** for his outstanding study results and diploma thesis.

Zdena Rábová Prizes were awarded to **Bc. Vendula Hrubá** and to **Bc. Zdeněk Letko** for their outstanding study results, excellent creative activities and other activities increasing the prestige of the FIT BUT.

Four Ph.D. students of the FIT BUT were awarded **Prof. Hlavička Prize** at the Czech-Slovak seminar Computer Architecture and Diagnostics which was held on 17th – 19th September 2007 in Srní na Šumavě, for their contributions in the individual categories, namely: **Ing. Zdeněk Vašíček -** 1st place in the category of the first year, **Ing. Michal Bidlo** 1st place in the category of the third year, **Ing. Lukáš Stareček** - 3rd place in the category of the second year, and **Ing. Tomáš Martínek** - 2nd place in the category of the third year.

Ing. Jan Kupčík was awarded **Josef Hlávka Prize** for his research work. **Josef Hlávka Prize** is meant for talented students of Bachelor's, Master's and doctoral studies who showed extraordinary abilities and creativity in their branch, and for young and talented scientists-workers of the Academy of Science of the Czech Republic, under 33 years of age.

Three students were awarded Certificates of Merit **in AFCEA 2007,** a student competition for the best achievement in the area of information and communication system organized by the Czech section of AFCEA (Armed Forces Communications & Electronics Association): **Ing. Radek Kubíček** for his diploma thesis called "Visualization of Marked Cells of a Model Organism", **Ing. Roman Juránek** for his diploma thesis called "Pattern Recognition in Image Using Classifiers", and **Rostislav Jadavan, Bc.**, for his Bachelor's project called "Real-time Beam Monitoring".

A group of students from Brno University of Technology won the first place in the Czech and Slovak finals of **Microsoft Imagine Cup 2007** for their project called Silent Books, whose aim is to provide information to the deaf using sign language. From the FIT BUT it was **Aleš Šturala, Bc.** who contributed to the project.

Ondřej Martinský, Bc. won the second place in **ACM Student Research Competition 2007** with his Bachelor's project called "Recognition of Vehicle Number Plates."

Prof. Ing. Václav Dvořák, DrSc., Ing. Jiří Jaroš and **Ing. Miloš Ohlídal** won a Certificate of Merit for the Evolutionary Design of Collective Communication **in 2007 HUMIES** (Human-Competitive results produced by genetic and evolutionary computation), held in London within the 2007 Genetic and Evolutionary Computation Conference (GECCO-2007).

In the third year of the scholarship programme for the Czech Republic – **GE Foundation Scholar-Leaders Program 2007** (General Electric Foundation), meant for

15 excellent second-year students of five selected universities (ČVUT, ČZU, Masaryk University, VŠB-TU and BUT) involved in economics, management, engineering or technology, **Jan Koriťák, Vlastimil Košař and Ondřej Lengál ,** three students of the FIT BUT, received the scholarships.

Prof. Ing. Tomáš Hruška, CSc. was awarded a **Cisco Academy Prize** on the occasion of 10th anniversary of the NetAcad programme. Several schools that participated from the very outset or contributed significantly to the programme innovations were appreciated. Mgr. Dana Kuchtová, Minister of MSMT, handed over prizes to representatives of CESNET and of ČVUT Praha for their contribution to the development of NetAcad, as well as to FIT BUT and Střední škola aplikované kybernetiky (Vocational School of Applied Cybernetics) in Hradec Králové.

The Award Ceremony for the winners of **IT Diploma Thesis of 2007** took place in Bethlehem Chapel, Prague. This competition for best diploma theses in Software Engineering and Computer Science area is focused on promotion of Technical Higher Education and on enhancement of students motivation and efforts. **Ing. Jiří Tobola** won a special prize awarded by the Profinit Company for his "Platform for Rapid Development of Network Devices", a thesis supervised by Ing. Jan Kořenek.

Petr Kobierský, **Bc., Tomáš Málek, Bc.,** and **Viktor Puš, Bc.** received support within the **Honeywell Scholarship Programme.**

Ondřej Martinský, Bc. won 1st place in **Diploma Thesis of the Year** competition in the IT category with his Bachelor's project called "Recognition of Vehicle Number Plates", (supervised by Doc. Ing. František Zbořil, CSc).

In 2007, FIT BUT continued co-operating with the following significant partners:

- ANF Siemens Austria,
- ApS Brno, spol. s r.o.,
- AutoCont CZ, a.s.,
- CAMEA, spol. s r.o.,
- CESNET, z.s.p.o.,
- Cisco Systems,
- GRISOFT, s.r.o.,
- Harman-Becker, SRN,
- Honeywell, s.r.o.,
- IBM Czech Republic,
- Lingea, s.r.o.,
- LogicaCMG,
- MEDITRONIC s.r.o.,
- Microsoft CR, s.r.o.,
- MP-Soft, s.r.o. Brno,
- Phonexia s.r.o.,
- Vema, a.s.

Summary of two academic periods

2007 was the 6th year of the existence of the Faculty of Information Technology. A new campus consisting of both historical, beautifully repaired buildings and of brand new modern buildings was opened. This step closes a six-year period of perpetual improvement and expansion of the faculty under the current management. From the initial form of a department, the newly established faculty expanded as far as its space, budget and number of students is concerned. The constant expansion is now expected to end and a peaceful period of standard academic life is expected to begin. Hopefully, the main aim of the current faculty management was fulfilled - the aim of building up a top-quality, prestigious technical faculty focused on computer science not only in teaching but in research, too.

The complicated way to the establishing of the faculty six years ago is now gradually fading away even from the memories of the eye-witnesses. In 1997, when I became a new Head of the Department of Computer Science and Engineering, Faculty of Electrical Engineering and Computer Science, BUT, the number of students of the computer science was around 500 and the department was located in a small and rather shabby part of the monastery. The poor state of the school canteen, WCs and other rooms discouraged the academic staff from inviting guests from abroad.

The Faculty of Information Technology was established on 1st January 2002 with 800 students and 4 professors, 30 teachers and a small group of administrative workers. At present, the FIT includes about 2500 students, and an adequate number of teachers (including external ones) and non-academic workers. The division of the FIT into four departments and one Computer Centre has proved to be the right decision. At the same time, the Computer Centre provides technical management of all laboratories.

The interest of students clearly proved that the establishment of the new faculty was a correct and well-founded step. Not only did it enable more students to study information technology, it also raised the importance of Brno University of Technology as a significant centre of education and research in the area of IT. Those opposed to the faculty establishment, who were afraid of a fall in students´ interest in studies at BUT and who feared decline in the prestige of the school have hopefully been convinced of the opposite.

As far as the education is concerned, the six years were a period of transition to a new three-level model of study. The running out five-year Master's study programme called Electrical Engineering and Computer Science came to an end and the FIT focuses on three levels of new study programmes. Now the academic staff are facing an important task: optimization of the contents of the individual lines of study in the Master's study programme. A homogenous set of study support was completed with the aid of EU projects and is provided free of charge to all FIT students.

As far as the research is concerned, the young generation of researchers brings internationally comparable performance. A decrease in low-quality outputs and an increase in reviewed and recognized publications, applications or patents can be observed. Though the FIT did not receive any support through a research plan for the last two years, at present, research activities are financed much better and also the number of projects from different grants is rising. The scientific and research activities at the FIT were directed towards IT operation security for the last two years. It proved to be an eminently suitable theme which can offer further possibilities for getting support from both local and European sources. The

ability to gain finance from the EU is likely to become one of the main preconditions of successful projects in future.

The campus of the FIT was very well designed. A sufficient number of lecture halls and classrooms with WiFi signal are available. Video network linking the classrooms and recording of lectures have become a faculty standard. There is a sufficient number of laboratories and computer rooms at the faculty and the faculty library is now large enough to hold the amount of books purchased by the faculty. Moreover, the premises were supplemented with catering and housing facilities, a student club and a multi-purpose hall to form a practical whole.

On behalf of the management of the Faculty of Information Technology BUT I wish all members of academic staff, students, and all employees of the faculty favourable working conditions, and success in their efforts for a further development and benefit of the faculty. At the same time, I thank all employees who have contributed to the functioning of the FIT in its existence, for the extraordinary efforts devoted to all activities related with the foundation of the FIT, and for mutual understanding, solidarity, and wisdom they showed when seeking solutions to difficult problems.

Prof. Ing. Tomáš Hruška, CSc.
Dean of the FIT BUT

II. AREAS OF ACTIVITIES AT THE FIT

II.1. Study Programmes

II.1.1. Bachelor Study Programme – Information Technology (BIT), internal form of study

Number of applications for admission	1936
Number of applicants who sat for the entrance examination, including those who appeared on the back-up date	1503
Number of positive acceptance decisions, including those refused because of limited capacity	1218
Number of students who failed or did not turn up at the examination	718
Number of students admitted, without applicants admitted after reviewing the original decision	845
Number of students admitted	845
Number of students enrolled	624
Number of graduates in BIT	267

II.1.2. Follow-up Master Study Programme - Information Technology *(*MIT)*, internal form of study

Number of applications for admission	334
Number of applicants who sat for the entrance examination, including those who appeared on the back-up date	334
Number of positive acceptance decisions, including those refused because of limited capacity	334
Number of students who failed or did not turn up at the examination	0
Number of students admitted, without applicants admitted after reviewing the original decision	334
Total number of accepted applicants	334
Number of enrolled	281
Number of graduates, including those from the running-out programme (4)	186

II.1.3. Basic Statistical Data

Total number of students:	2507
Number of teachers:	57
Total number of graduates:	453

II.1.4. Development of Number of Graduates

**Number of Graduates in Computer Science and Engineering (CSE)
and Information Technology (IT)**

Specialization	1999	2000	2001	2002	2003	2004	2005	2006	2007
EI-BC-3				5	6	5	23	6	
IT-BC-3							164	275	267
EI-MGR-3								4	1
EI-MGR-5	77	96	107	99	87	91	90	181	85
IT-MGR-2									100

Summary of two academic periods

During the six-year period, the running out Electrical Engineering and Computer Science study programmes (MGR-5, MGR-3 a BC-3) came to an end. On the contrary, (BC-3 and MGR-2) IT study programmes continued.

The entrance examinations were organized by the FIT in co-operation with the Department of Mathematics of the Faculty of Electrical Engineering and Communications.
In 2002, applicants were examined in secondary school level maths and in elements of informatics. The latter were excluded from the entrance examinations in the following years. Tree years later corrections carried out by teachers were successfully replaced by computer scanning of answer sheets. No complaints or disputes appeared and all appeals were confirmed to be unsubstantiated.

Doc. Ing. Vladimír Drábek, CSc.
Vice-Dean for Education

II.2. Creative Activities, Science, Research and Postgraduate Doctoral Study

II.2.1. Science and Research

The faculty continued in the tradition of basic and applied research in the area of computer hardware, software, prototypes of computer-based systems, and application of information technology in practical life. The main research areas at the FIT BUT in 2007 were the following:

- Information and Database Systems
- Computer Graphics and Multimedia
- Speech Processing
- Computer Architecture
- Intelligent Systems and Robotics
- System Modelling, Simulation and Formal Verification
- IS Security and Cryptography

Let us mention here some important events which could give evidence of faculty activities and which are likely to influence its development in the years to come:

- Work on the faculty research plan "Security-oriented Research in Information Technology" (2007 to 2013).
- Participation in a significant research plan of FEEC BUT, "New Trends in Microelectronic Systems and Nanotechnologies" (MICROSYN).
- Co-operation with the Department of Informatics of the Slovak Academy of Science in publishing the journal of Computing and Informatics.
- Activities of members of the FIT in international scientific and research organizations, in editorial boards of journals and programme committees of international conferences (See paragraphs called "Membership in Organizations and Societies" in parts of this report dedicated to individual departments of the faculty)
- Extensive publication activity of the faculty (1 book, 34 journal articles and 178 contributions in conference proceedings)
- Work on the MSMT project Centre of basic research of LC (Centre of Computer Graphics).
- On the occasion of 6th anniversary of the establishment of the FIT, a scientific conference took place whose main aim was to discuss general problems of the FIT and provide mutual information on the most significant scientific, research and application areas.
- Organization of regular professional seminars with the participation of all faculty departments.
- Further development and use of the faculty information system, which helps to improve the quality of research infrastructure.

International Projects at the FIT in 2007

Agency	Theme	Project Code	Name of the Project	Total in thous. CZK
EU	6FP - IST	506811 AMI	Augmented Multi-party Interaction	166
EU	6FP - IST	027231 CARETAKER	Content Analysis and Retrieval Technologies to Apply Knowledge Extraction to massive Recording	2 604
EU	6FP	2005-2.5.5 SHADOWS	A Self-Healing Approach to Designing Complex Software Systems	1 350
EU	6FP - IST	033812 AMIDA	Augmented Multi-party interaction with Distance Access	1 470
EU	Erasmus	28213-IC-1-2005-1-BE	ER-Öostende	398
EU	Erasmus	28936-IC-1-2005-1	ER-Glamorgan	65
EU - USA	ATLANTIS	2006-4563/006-001-US CPT CPTUSA	ILERT - Toward International Learning Environment for Real-Time Safety-Critical Control Systems	62
Total				**6 115**

Higher Education Development Fund (FRVS) Projects at the FIT in 2007

FRVS MSMT	Theme	Name of the Project	Total in thous. CZK
569	G1	Preparation and Analysis of Multimedia and High-Structured Data Databases	109
673	G1	Innovative Approach to the Compiler Projects	85
762	G1	Teaching Formal Language Theory at the International EU Level	110
1743	A a	Innovation of Laboratory of Intelligent Systems	1 747
2233	G1	Modelling of Service-Oriented Architectures	89
2286	G 1	Education Support for the 'Intelligent Systems' Course	86
2307	G 1	Industrial Wireless ZigBee Network	125
2331	A a	Teaching Kits for Technical Courses	1 234
2360	A b	Laboratory of Applied Very Powerful Computational Systems	1 634
2472	G1	Education Support for Evolutionary Design Based on Development	112
Total			**5 331**

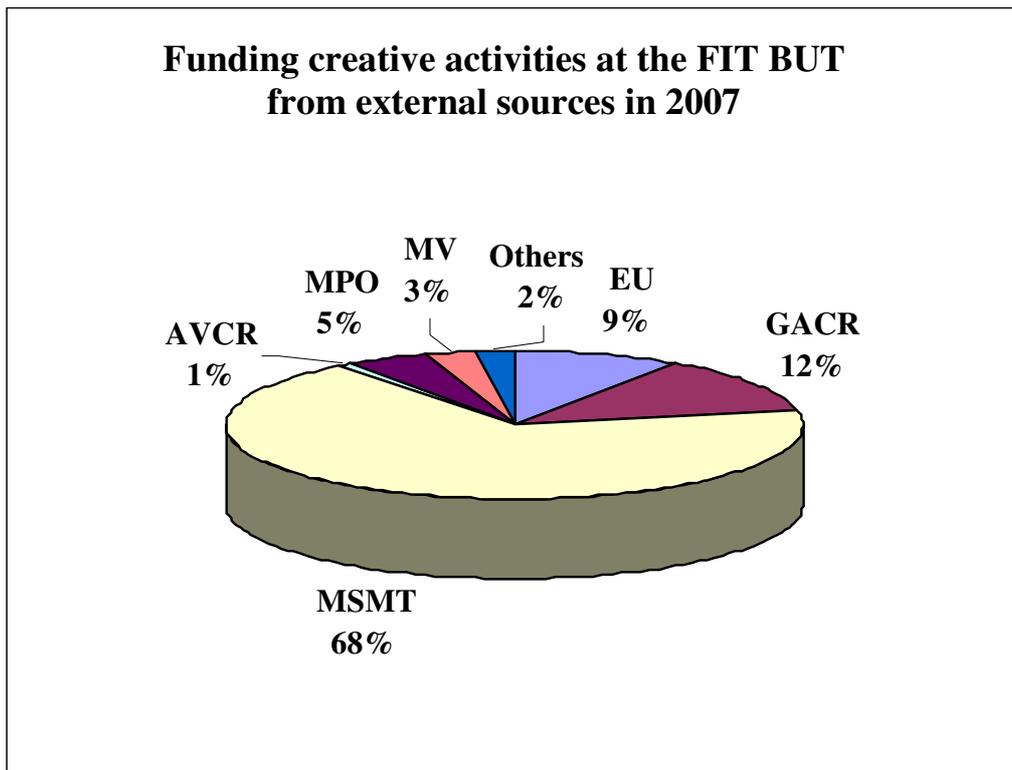**Grant Agency of Czech Republic (GACR) Projects at the FIT in 2007**

GA CR	Name of the Project	Total in thous. CZK
102/07/0322	Advanced Formal Approaches in the Design and Verification of Computer-based Systems	785
102/07/0850	Design and HW Implementation of a Patent-Invention Machine	668
201/07/0005	Multi-Information Technology: Theory, Models and Methods	464
102/07/P306	Model-Based System Development	215
102/07/P431	Intelligent Agent and Multi-agent Systems	220
201/07/P544	Framework for the Deductive Analysis of Embedded Software	170
102/06/P383	Interactive Keyword Detector	285
102/06/P309	Research on Methods of Intelligent System Modelling and Simulation	240
102/06/P076	Methods and Tools for Automated Bug Detection in SW	237
102/06/0599	Methods of Polymorphic Digital Circuit Design	623
201/06/1821	Algorithms for Image Recognition	817
102/05/0278	New Trends in Research and Application of Voice Technology	220
102/05/H050	Integrated Approach to Education of PhD Students in the Area of Parallel and Distributed Systems	1 344
102/05/0467	Architectures for Embedded System Networks	318
102/05/0723	Framework or Formal Specifications and Prototyping of Network Applications of Information Systems	580
102/05/P193	Optimization in Diagnostics and Digital Systems	83
Total		**7 269**

Survey of Other Research Projects at the FIT in 2007

Agency	Project Code	Name of the project	Total in thous. CZK
MSMT	MSM 0021630528	Security-Oriented Research in Information Technology	26 700
MSMT	MSM 0021630503	New trends in microelectronic systems and nanotechnologies (MIKROSYN)	425
MSMT	1K04106	Reputation-based security in information systems	282
MSMT	2B06052	Determination of markers, screening and early diagnostics of cancer diseases using highly automated processing of multidimensional biomedical images	3 064
MSMT	LC06008	Centre of Computer Graphics	2 198
MSMT	2-06-27	Barrande - Vérification automatique de programmes avec structures de données dynamiques a pointeurs	50
MSMT	2C06008	Virtual laboratory of microprocessor technology application	1 857
MPO	FT-TA3/006	Research and development of corpus and speech technologies in new generation of electronic dictionaries	1 307
MPO	FT-TA3/162	Research and application of systems for large data analysis and decision support	461
MPO	FT-TA3/128	Language and Development Environment for Microprocessor Design	522
MPO	FI-IM3/223	Research, Development and Deployment of Secure Client Authorization of Electronic Transactions	440
MV	VD 20072010B16	Overcoming the Language Barrier Complicating Investigation into Financing Terrorism and Serious Financial Crimes	1650
NBÚ	ST20072007006	Technical Evaluation of Biometric Systems	842
AVCR	1ET400750408	Rapid prototyping tools for development of HW-accelerated embedded image- and video-processing applications	522
Total			**40 320**

Survey of external sources in funding creative activities at the FIT in 2007

Source	Project	Number of projects	Total in thous.CZK
MSMT	Research projects	2	**27 125**
MSMT	Higher education development fund (FRVS) projects	10	**5 331**
MSMT	Other MSMT projects	5	**7 451**
GACR	Grant agency of CR projects	16	**7 269**
AVCR	Academy of Science of CR project	1	**522**
MV	Ministry of the Interior project	1	**1 650**
MPO	Ministry of Industry and Trade projects	4	**2 730**
EU	Projects of the 5th and 6th framework programme of the EU	4	**5 590**
Others		4	**1 367**
Total			**59 035**

**Funding creative activities at the FIT BUT
from external sources in 2007**

II.2.2. Doctoral Study Programme

At present two doctoral study programmes are offered at the FIT BUT. A three-year Information Technology doctoral study programme started on 1st January 2002. In order to increase the efficiency of doctoral studies a new doctoral study programme was accredited in 2007 – a four-year Computer Science and Engineering programme, by which the original three-year doctoral study programme should gradually be replaced. Both programmes are offered in English, too.

The main tasks solved in this area in 2007 were the following:

- Co-operation with the Faculty of Electrical Engineering and Communications, BUT, Faculty of Mechanical Engineering, BUT, and with the Faculty of Informatics, Masaryk University in Brno as far as the offer of courses, organization of the State Doctoral Examinations, and defences of dissertations are concerned.
- Integrated approach to education of Ph.D. students in the area of parallel and distributed systems, a GACR doctoral grant in co-operation with the Faculty of Informatics, Masaryk University in Brno.
- Organization of the Doctoral Workshop on Mathematical and Engineering Methods in Computer Science – MEMICS - in co-operation with the Faculty of Informatics, Masaryk University in Brno.
- Open Day for those interested in the Doctoral study programme at the FIT and the Day of Science. The event is aimed at increasing students' awareness of research taking place at the FIT, and at increasing students' interest in doctoral studies.
- Offer of a large choice of subjects with respect to high professional quality, a balance between the theory and application in the field of IT, and detailed descriptions of the individual subjects (both in Czech and in English) are available on the Internet to students already enrolled as well as to prospective applicants.
- Record of dissertation theses and offer of new themes through the Faculty Information System.
- Consistent checking of the individual study plans of Ph.D. students followed by differentiated extent of extra scholarship money.
- Providing a scholarship money "stimulus" for doctoral students who succeed in completing and defending their dissertations during the 3rd and 4th years of study.
- Participation of Ph.D. students in regular seminars held at the departments of the faculty.

Ph.D. study statistics

Year	Type of study	Number of students
1.	internal	46
	combined	8
2.	internal	21
	combined	3
3.	internal	19
	combined	1
4.	prolonged internal	9
	combined	3
5.	combined	16
6.	combined	7
7.	combined	14
Total		147

Ph.D. theses defended in 2007

Ph.D. student	Cagaš Pavel, Ing.
Thesis	Design of programming language for rapid visualization and control application development systems
Supervisor	Honzík Jan M., Prof. Ing., CSc.
Defended on	20th June 2007

Ph.D. student	Bidlo Radek, Ing.
Thesis	On the Power of Some Modified Formal Models
Supervisor	Meduna Alexander, Prof. RNDr., CSc.
Defended on	4th October 2007

Ph.D. student	Blatný Petr, Ing.
Thesis	Formal Models over Free Groups
Supervisor	Meduna Alexander, Prof. RNDr., CSc.
Defended on	4th October 2007

Ph.D. student	Křivka Zbyněk, Ing.
Thesis	Rewriting Systems with Restricted Configurations
Supervisor	Meduna Alexander, Prof. RNDr., CSc.
Defended on	4th October 2007

Ph.D. student Masopust Tomáš, Mgr.
Thesis   Controlled Formal Models and Their Reduction
Supervisor   Meduna Alexander, Prof. RNDr., CSc.
Defended on   4th October 2007

Ph.D. student Ohlídal Miloš, Ing.
Thesis   Evolutionary Design of Collective Communication Based on Prediction of
              Conflicts in Interconnection Networks
Supervisor   Schwarz Josef, Doc. Ing., CSc.
Defended on   9th October 2007

Ph.D. student Pečenka Tomáš, Ing.
Thesis   Tools and Methods for Automatic Generation of Bench CircDITS
Supervisor   Kotásek Zdeněk, Doc. Ing., CSc.
Defended on   17th October 2007

Ph.D. student Bryan Luděk, Ing.
Thesis   Hardware-Based Object Detection Method
Supervisor   Drábek Vladimír, Doc. Ing., CSc.
Defended on   26th November 2007

Ph.D. student Rogalewicz Adam, Mgr.
Thesis   Verification of Programmes with Complex Data Structures
Supervisor   Vojnar Tomáš, Doc. Ing., Ph.D.
Defended on   28th November 2007

Ph.D. student Grézl František, Ing.
Thesis   TRAP-based Probabilistic Features for Automatic Speech Recognition
Supervisor   Černocký Jan, Doc. Dr. Ing.
Defended on   29th November 2007

II.2.3. Student Creative Activities

The student creative activity at the FIT was based on a long tradition and experience. Student conferences and competitions in computer science and information technology have been organized annually since 1972.

Although the FEECS split into two faculties (the FIT and FEEC), STUDENT EEICT (Electrical Engineering, Information and Communication Technologies) Conference and Competition have been organized for students of both faculties.

RNDr. Jitka Kreslíková, CSc. and Mgr. Katarína Lichtnegerová, Ph.D. are the main organizers of the competition from the FIT.

In 2007, the student conference took place on 26th April at the premises of BUT Pod Palackého vrchem. After the opening ceremony, students of the FIT Master's study programme and Ph.D. students defended their work in the following specializations: Information systems, Graphics and Multimedia, Computer systems, and Intelligent systems.

The evaluation committees were formed by academics, sponsors, and representatives of the Student Union. After presentations, the committees chose the best contributions and proposed financial rewards for the individual authors. Thus the professional level of the work, attractiveness for industry and students' viewpoint were incompassed.

Twelve competitors from the Bachelor's study programme, thirty from the Master's study programme, and seventeen doctoral students of the FIT took part. All contributions were successfully reviewed and published in the Conference Proceedings. The electronic version of the proceedings can be found on CDs and on http://www.feec.vutbr.cz/EEICT.

After all committees had completed their work, a final ceremony took place in which all winners received financial and other rewards. The competition was sponsored by: Tyco, ABB, Honeywell, Siemens, AMI Semiconductor, ANF DATA, Freescale Semiconductors, Dribo, H TEST, IEEE, TietoEnator, ON Semiconductor, Schneider Electric, Computer Press and Moeller.

Summary of two academic periods

In the sphere of creative activities the six-year existence of the FIT meant a remarkable stage of quantitative and especially qualitative development. Efficient infrastructure involving a department of creative activities and faculty information system were created, faculty library was accumulated and advisory boards established. (Scientific Board, Specialist Board for Doctoral Study Programme, Creative Project Board and others). The traditional research areas typical of the former Department of Computer Science and Engineering, Faculty of Electrical Engineering and Computer Science, were enriched by new and perspective lines of research (security, speech processing, formal verification of systems, bioinformatics and others). There was a significant increase in the international scientific co-operation (1 international project in 2002, 7 projects in 2007) and also in external financing (20,4 mil. CZK in 2002, 59 mil. CZK in 2007). In summary, the FIT has found a dominant

research theme in the *security and reliability of information systems and computer systems,* which will provide further permanent development of the research within a research project in the following six years.

Special attention was paid to the development of doctoral studies. The accreditation of a four-year study programme Computer Science and Engineering, work on an exclusive doctoral GACR grant, the EEICT competition and other promotion activities resulted in an increase of Ph.D. students (86 in 2002 vs. 147 in 2007), and in a considerable improvement of doctoral study efficiency (2 dissertation defences in 2002 vs. 10 in 2007).

Prof. RNDr. Milan Češka, CSc.
Vice-Dean for Science and Research

II.3. International Relations

International activities at the FIT are dealt with by the following group: the Vice-Dean Prof. Ing. Jan M. Honzík CSc., Bc. Michaela Studená, the assistant for public relations, Doc. Dr. Ing. P. Zemčík, a teacher with considerable international experience, and Dr. Ing. Martin Drahanský, a young and promising teacher. International activities are focused on support of international mobility of both students and teachers, on organizing and offering tuition to foreign students who pay their tuition fees and on information and consultation services. In 2007, there were active bilateral agreements between the faculty and **33** foreign universities in the framework of LLP Erasmus Programme, which enabled **39** FIT students to spend some time at study stays abroad and **60** students from foreign partner institutions to study at the FIT. 14 study stays abroad were financed from research programmes MSMT and BUT mobility fund. Apart from Erasmus Programme, there were six foreign students accepted to study at the FIT.

Each student's language competence for the particular study stay is highly emphasized and tested at a competition, in co-operation with the Department of Languages, the Faculty of Electrical Engineering and Communication, BUT (PhDr. Marcela Borecká).

The following table lists foreign partners who had active bilateral agreements with the FIT within the framework of LLP Erasmus:

Country	University	Erasmus code
Belgium	Katholieke Hogeschool Brugge Oostende http://www.khbo.be/international/index.php?linkRubriek=International	B BRUGGE11
	Katholieke Hogeschool Kempen http://www.khk.be/khk04/	B GEEL07
Bulgaria	Technical University of Sofia http://www.tu-sofia.bg/index.html	BG SOFIA16
Denmark	University of Southern Denmark www.ouc.dk	DK ODENSE04
Finland	Helsinki University of Technology http://www.hut.fi/English	FI ESPOO01
	Lappeenranta University of Technology http://www.lut.fi/en	SF LAPPEEN01
	University of Joensuu http://www.joensuu.fi/englishindex.html	SF JOENSUU01
	Oulu University of Applied Sciences www.oamk.fi	SF OULU11
France	Ecole Supérieure d`Ingénieurs en Électrotechnique http://www.esiee.fr	F NOISY02
	Universite la Rochelle http://www.univ-lr.fr	F LA-ROCH08
	Université de Paris 7-Denis Diderot http://www.sigu7.jussieu.fr	F PARIS007
	ESIEE Amiens http://www.esiee-amiens.fr	F AMIENS18

Country	University	Erasmus code
France	Grenoble Institute of Technology http://www.inpg.fr/92723626/1/fiche___pagelibre/	F GRENOBLE22
The Netherlands	Utrecht University, Faculty of Mathematics and Computer Science http://www.math.uu.nl	NLUTRECHT01
Germany	Universität Siegen, IMT http://www.uni-siegen.de	D SIEGEN01
	Fachhochschule Wiesbaden http://fh-web1.informatik.fh-wiesbaden.de/go.cfm	D WIESBAD01
Portugal	Universidade de Trás-os-Montes e Alto Douro http://www.utad.pt	P VILA-RE01
	Instituto Politécnico do Porto http://www.ipp.pt/english/	P PORTO05
	Instituto Politécnico do Lisboa http://www.ipl.pt/	P LISBOA05
Austria	Graz University of Technology http://www.international.tugraz.at	A GRAZ 02
Greece	Technological Educational Institute of Crete http://www.teiher.gr	GR KRITIS 04
	Panepistimio Kritis, Faculty of Sciences and Engineeting http://www.neagenia.gr/files/a6000003_06.html	GR KRITIS 01
	Aristotle University of Thessaloniki http://infolab.gen.auth.gr/index_en.htm	GR THESSAL 01
Slovakia	Slovak University of Technology in Bratislava http://www.stuba.sk/eng1/about/index.html	SK BRATISL 01
	Comenius University in Bratislava http://www.uniba.sk	SK BRATISL 02
	Technical University in Košice http://www.tuke.sk/	SK KOSICE03
Spain	Universidad de Valladolid http://www.uva.es	E VALLADO 01
	Universidad Politécnica de Madrid http://www.upm.es	E MADRID 05
	Universidad Rey Juan Carlos http://www.urjc.es/	E MADRID26
Turkey	Yildiz Technical University, Dept. of Mathematical Engineering http://www.yildiz.edu.tr/english/index2.php	TR ISTANBUL
	Ankara Üniversitesi http://www.ankara.edu.tr/english/	TR ANKARA 01
Great Britain	University of Surrey http://www.surrey.ac.uk	UK GUILDFO 01
	University of Bristol http://www.brip.ac.uk	UK BRISTOL 01

Student mobility at the FIT in 2007 –ERASMUS and others

Incoming students:

Name	Stay	University
Aysegul MUT	1/2007 – 1/2007	Turkey, Yildiz Technical University
Fadime AYDIN	1/2007 – 1/2007	Turkey , Yildiz Technical University
Deniz ACILAN	1/2007 – 1/2007	Turkey , Yildiz Technical University
Stefan SIEBEL	1/2007 – 2/2007	Germany, Universität Siegen
Alaney Kilson J. P. DÓRIA	1/2007 – 6/2007	Portugal, ISEL-Lisboa
Jorge BARRACHINA	1/2007 – 6/2007	Spain, UPM Madrid
Iria Gonzalez HURTADO	1/2007 – 6/2007	Spain, UPM Madrid
Jaime Herrera RIAZA	1/2007 – 6/2007	Spain, UPM Madrid
Peter STANOVSKÝ	1/2007 – 2/2007	Slovakia, FIIT Bratislava
Martin HETEŠ	2/2007 – 6/2007	Slovakia, FIIT Bratislava
Ján ADAMICA	2/2007 – 6/2007	Slovakia, FIIT Bratislava
Tomáš BARTALOS	2/2007 – 6/2007	Slovakia, FIIT Bratislava
Nelson GONCALVES	2/2007 – 6/2007	Portugal, ISEL
Nuno CORREIA	2/2007 – 6/2007	Portugal, ISEL
Noelia MANSO TARDÓN	2/2007 – 7/2007	Spain, Valladolid
David SAN LEÓN GRANADO	2/2007 – 7/2007	Spain, Valladolid
Samuel GARCÍA BLANCO	2/2007 – 6/2007	Spain, Valladolid
Caesar Martin GOTOR	2/2007 – 6/2007	Spain, UPM Madrid
Otto Vazques MACHO	2/2007 – 6/2007	Spain, UPM Madrid
Simo Verneri HEILIÖ	2/2007 – 7/2007	Finland, Lappeenranta
Marina KOUNTAKI	2/2007 – 7/2007	Greece, TEI of Crete
Kostas KALAFATAKIS	2/2007 – 7/2007	Greece, TEI of Crete
Marco Emanuel Luis PINCHO	2/2007 – 7/2007	Portugal, Coimbra
Julien Bernard di FABRE	2/2007 – 7/2007	Portugal, Coimbra
André Tenreiro de ALMEIDA	2/2007 – 7/2007	Portugal, Coimbra
Filipe Miguel Pinhao BARBADO	2/2007 – 7/2007	Portugal, Coimbra
Gema VIÑUALES	2/2007 – 6/2007	Spain, Sevilla
Jérome MÉRELLE	3/2007 – 6/2007	France, ESIEE Amiens
Maxime BALÉDENT	3/2007 – 6/2007	France, ESIEE Amiens
Guillaume DELAPORTE	3/2007 – 6/2007	France, ESIEE Amiens
Joonas HIETAVA	9/2007 – 12/2007	Finland, Oulu
Tommi KOSKINEN	9/2007 – 12/2007	Finland, Helsinki
Erdem BAYARCELIK	9/2007 – 12/2007	Turkey, Yildiz Technical University
Sercan ICLI	9/2007 – 12/2007	Turkey, Yildiz Technical University
Matej VIDOVENEC	9/2007 – 12/2007	Slovakia, FIIT Bratislava
Adam VALENT	9/2007 – 12/2007	Slovakia, FIIT Bratislava
Vladimír CHOVANEC	9/2007 – 12/2007	Slovakia, FIIT Bratislava
Michal KACINA	9/2007 – 12/2007	Slovakia, FIIT Bratislava
Markéta DUBSKÁ	9/2007 – 12/2007	Slovakia, UK Bratislava
Viktória BAKUROVÁ	9/2007 – 12/2007	Slovakia, UK Bratislava
Barbora GALLUSOVÁ	9/2007 – 12/2007	Slovakia, UK Bratislava
Maciej ZBIŇKOWSKI	9/2007 – 12/2007	Poland, Warsaw

Name	Stay	University
Krysztof WNUK	9/2007 – 12/2007	Poland, Warsaw
Lorena GARCIA	9/2007 – 12/2007	Spain, Valladolid
Jaime SANTOS	9/2007 – 12/2007	Spain, Valladolid
Antonio CASERO	9/2007 – 12/2007	Spain, Valladolid
Eduardo OLIVEIRA	9/2007 – 12/2007	Portugal, UTAD
Rui MESQUITA	9/2007 – 12/2007	Portugal, UTAD
Hugo LLORENTE	9/2007 – 12/2007	Portugal, UTAD
Manuel CARVALHO	9/2007 – 12/2007	Portugal, UTAD
Vitor PEIXOTO	9/2007 – 12/2007	Portugal, UTAD
Bruno FONSECA	9/2007 – 12/2007	Portugal, UTAD
Vitor SALVADOR	9/2007 – 12/2007	Portugal, UTAD
José MONTEIRO	9/2007 – 12/2007	Portugal, UTAD
Helena FERNANDEZ	9/2007 – 12/2007	Portugal, Coimbra
Patrick RENTE	9/2007 – 12/2007	Portugal, Coimbra
Pedro DIAS	9/2007 – 12/2007	Portugal, Coimbra
Daniel MERAYO	9/2007 – 12/2007	Spain, UPM Madrid
José MADRUGA	10/2007 – 12/2007	Spain, UPM Madrid
Daniel Olivares ROZA	9/2007 – 12/2007	Spain, UPM Madrid
Stefan KOMBRINK	11/2007 – 12/2007	Germany, Stuttgart
Ioannis SKLAVOUNOS	1/2007 – 5/2007	Greece, TEI of Crete (LEONARDO)
Ioannis KARAMOLEGOS	1/2007 – 7/2007	Greece, TEI of Crete (LEONARDO)
Andreas NIKIFORAKIS	1/2007 – 7/2007	Greece, TEI of Crete (LEONARDO)
Ilya OPARIN	5/2007 – 6/2007	Russia (Internship)
Mayank GOEL	5/2007 – 7/2007	India (Internship)
Santhosh Kumar CHELLAPPAN PILAI	5/2007 – 12/2007	India, (Internship)

Unlabelled stays: stays within the LLP Erasmus programme

Stays abroad:

Name	Stay	University
Michal Čáp	1/2007 – 6/2007	Great Britain, Coventry
Ondřej Hampl	1/2007 – 2/2007	Germany, Fachhochschule Wiesbaden
David Hnilica	1/2007 – 6/2007	France, ESIEE Paris
Tomáš Obrátil	1/2007 – 5/2007	Finland, Lappeenranta University of Technology
Jiří Petrželka	1/2007 – 7/2007	Great Britain, Coventry
Karel Piwko	1/2007 – 6/2007	France, ESIEE Paris
Martin Pražák	1/2007 – 7/2007	Great Britain, University of Bristol
Miroslav Sobotka	1/2007 – 2/2007	France, Universite la Rochelle
Filip Šuba	1/2007 – 5/2007	Finland, Helsinki University of Technology
Radovan Tůma	1/2007 – 2/2007	Greece, University of Crete
Tomáš Vítek	1/2007 – 1/2007	Denmark, University of Southern Denmark
Jan Zahradník	1/2007 – 5/2007	Finland, Lappeenranta University of Technology
Martin Klaudíny	1/2007 – 6/2007	Great Britain, Surrey
Jaroslav Vališ	1/2007 – 8/2007	France, Rennes
Filip Konečný	1/2007 – 6/2007	Great Britain, Bristol
Martin Krč	1/2007 – 6/2007	Great Britain, Bristol
Igor Mariščák	2/2007 – 6/2007	Denmark, Odense
Jiří Bělohlávek	2/2007 – 7/2007	The Netherlands, Utrecht
Petr Knoth	2/2007 – 7/2007	The Netherlands, Utrecht
Ivan Nejezchleb	2/2007 – 6/2007	Austria, TU Graz
Lukáš Jedlička	2/2007 – 6/2007	Austria, TU Graz
Jaroslav Řezník	2/2007 – 6/2007	Spain, UPM Madrid
Tomáš Ochmann	2/2007 – 6/2007	Spain, UPM Madrid
Michal Bartl	2/2007 – 7/2007	Greece, TEI of Crete
Jiří Vaněk	3/2007 – 8/2007	Germany, Wiesbaden
Martin Šušlík	8/2007-9/2007	The Netherlands, Utrecht, James Boswell Instituut
Michal Rozsypálek	8/2007 – 11/2007	Finland, Joensuu
Martin Čížek	8/2007 – 12/2007	Finland, Lappeenranta
Fraňo Procházka	8/2007 – 12/2007	Denmark, Odense
Jakub Holáň	8/2007 – 12/2007	Finland, Oulu
Jan Liška	9/2007 – 12/2007	Denmark, Odense
Pavel Jiráček	9/2007 – 12/2007	Denmark, Odense
Vojtěch Koláček	9/2007 – 12/2007	Great Britain, Surrey
Aleš Šturala	9/2007 – 12/2007	The Netherlands, Utrecht
Karel Veselý	9/2007 – 12/2007	France, Avignon
Petr Komosný	9/2007 – 12/2007	Finland, Oulu
Michal Ježek	9/2007 – 12/2007	Turkey, Yildiz Technical University
Dimitar Jordanov	9/2007 – 12/2007	Turkey, Yildiz Technical University
Patrik Beck	9/2007 – 12/2007	Great Britain, Bristol
Milan Pavlíček	8/2006 – 12/2006	Denmark, University of Southern Denmark (RP MSMT)
Jan Bartůšek	10/2006 – 12/2006	Greece, TEI of Crete (RP MSMT)
Ondřej Glembek	1/2007 – 6/2007	USA. (RP MSMT)
Martin Topinka	2/2007 – 6/2007	Poland, Wroclaw (RP MSMT)
Martin Klaudíny	6/2007 – 7/2007	Great Britain (RP MSMT)
Martin Šuslík	7/2007 – 7/2007	Romania, Galati (MSF VUT)
Jan Blažek	7/2007 – 7/2007	Romania, Galati (MSF VUT)

Name	Stay	University
Martin Krč	7/2007 – 7/2007	Romania, Galati (MSF VUT)
Oldřich Ešner	7/2007 – 7/2007	Romania Galati (MSF VUT)
Michal Čáp	9/2007 – 12/2007	The Netherlands, Utrecht (RP MSMT)
Jiří Techet	9/2007 – 12/2007	Slovenia (RP MSMT)
Pavel Žák	10/2007 – 11/2007	Germany (RP MSMT)
Radovan Jošth	10/2007 – 12/2007	Slovakia, FIIT STU Bratislava (RP MSMT)
Michal Hradiš	10/2007 – 12/2007	USA, Penn Stat Erie, The Behrend College (RP MSMT)

Unlabelled stays: financed within LLP Erasmus programme, MSMT CR (Ministry of Education, Czech Republic) and the BUT mobility fund.

Summary of two academic periods

The two periods were rich in international relations and activities.

The student mobility reached a very high level. Due to partnerships with a number of schools in Europe, the faculty succeeded in meeting requirements of students interested in studying abroad within the framework of Socrates/Erasmus Programme (LLP Erasmus since 2007). The faculty was one of the partner schools involved in Socrates IP (Intensive Programme), through which international summer schools for students are organized. Each year two to four students from each partner institution participate in such schools. In 2004, the summer school was organized by the FIT.

Our teachers are capable of teaching in English at a high level and, in young teachers, this capability forms an indispensable part of their qualifications. The language competences, excellent equipment of classrooms and laboratories, as well as high-quality service offered to foreign students attract ever more incoming students. The type of study in which foreign students have to pay their fees and which stimulated teachers to offer tuition in English, is losing its importance. The faculty is well prepared to offer tuition in English to foreigners as well as to Czech students in the near future.

As far as the co-operation with companies is concerned, the faculty achieved good results through contracts and participation of some companies in teaching and creative activities, especially Microsoft, IBM, Grisoft, and a number of minor companies. The pilot project of Microsoft courses for students of Bachelor study programme (20 open credits) proved to be useful and became a functional model for co-operation with other companies – e.g. IBM and some other projects.

Thanks to a research programme, four members of the administrative staff of the faculty made use of the possibility to participate in a week's professional stay abroad, which enhanced the international character of the staff.

Prof. Ing. Jan. M. Honzík, CSc.
Vice-Dean for Public Relations

II.4. Lifelong Education

Doc. Ing. Jiří Kunovský, CSc. contributed to the programme of the Third Age University (U3V) by giving lectures on "Digital photography and computer graphics". Based on the experience from previous years and on a large amount of senior students interested in his lectures, Doc. Ing. Jiří Kunovský, CSc. offered "Digital photography and computer graphics" in the best-equipped laboratories of the FIT in 2007. The use of a dataprojector and experiments of senior students on the computer became a standard part of the teaching routine.

In 2007, streaming recording and database of audio-visual recording of lectures as well as other forms of tuition were developed, supported by a MSMT project. Most lecture halls are equipped with cameras and other tools that can transmit the video-projection of the teacher and video-projected data into other lecture halls, which enables simultaneous teaching in several lecture halls. The video-projection of the teacher is transmitted via the intranet and can be seen on all computers in the FIT campus and halls of residence. Audio and video files are saved in special data stores, and after some editing (e.g. removal of breaks and creation of subtitles) are available to all teachers and students of the FIT. This system must respect all personality protection rights and is used to an extent defined by the teacher. The development programme enhanced the readiness of most teachers to make the files accessible to all students for three years. A set of audio-video lectures, electronic presentations and electronic supports form modern supplement to internal study and offer an important means of e-learning for combined and distant studies. This intention is likely to continue in the following years with the aim of achieving full coverage of teaching in the Czech language and the aim of creating the same set in the English language.

Ing. David Martínek from the FIT provided all-year tuition of "Selected Parts of Informatics" for the secondary school in Vídeňská Street, Brno. The teaching took place in the FIT Computer Centre once a week and offered the following topics of computer science: programming and independent work on projects, especially in C, Scheme and Java languages, operating systems – fundamentals of Unix/Linux systems (basics of control, and script programming), and work with the Internet, (information retrieval).

In 2007, the FIT organized five optional courses dedicated to Microsoft technologies in close co-operation with ApS Brno s.r.o. These highly specialized courses equipped students with deep knowledge in the area of administration of Microsoft server systems and NET technology. Their practical orientation is nevertheless based on theoretical knowledge students had acquired in their courses at the FIT.

Each of the five courses prepares students for an international exam and for achieving the MCP - Microsoft Certified Professional, an internationally recognized certificate which requires a high level of knowledge. More than fifty FIT students received the certificate in 2007. This high percentage of success at the exams proves the high level of preparatory courses assisted by Microsoft IT Academy.

Summary of two academic periods

Since the establishment of the faculty, its development has been based on traditional forms of education. No activities directed towards life-long education courses for those who are not enrolled FIT students have been planned. And no such activities are being considered for the near future as there is a permanent shortage of quality teachers due to high numbers of internal students. A number of teaching tools were developed and could support such activities if there were favourable conditions for their use at the FIT: mainly study support, bases of audio-visual lectures of about 60 courses and other data enabling easier orientation in study materials. Teaching programming at secondary schools was one of the non-traditional forms of education. Doc. Kunovský was actively engaged in the University of the Third Age of BUT.

Prof. Ing. Jan. M. Honzík, CSc.
Vice-Dean for Public Relations

II.5. Faculty Development, Construction and Dislocation in 2007

In 2007, the managements of BUT and FIT concentrated on the completion of the strategic investment intention of dislocation and stabilization of the FIT in Božetěchova 2 and Božetěchova 1 premises. A special attention was paid to the completion of the campus construction and re-construction.

In 2007, the second stage of reconstruction of the FIT campus and reconstruction of the historical buildings of Cartusian monastery were carried out so that this part might be approved and put into operation by the beginning of the 2008/2009 academic year at the latest. The reconstruction of. the historical buildings of Cartusian monastery and the construction of the complex II. of lecture halls meant the heaviest investment in the modern history of Brno University of Technology.

The campus opening ceremony was held on 15th October 2007 in attendance of representatives of the Ministry of Education of the Czech Republic, of the region, of Brno, and representatives of universities. In the second half of 2007, the faculty was dislocated step by step into the reconstructed buildings of Carthusian monastery.

Summary of two academic periods

In the last six years, the FIT and BUT managements succeeded in realizing the building programme defined in the times of faculty establishment – to provide 2500 students with enough space and material and technical resources. The new FIT campus offers the necessary background both for tuition and supplementary services such as accommodation, catering, clubs, a gallery and parking. The investment intention succeeded in preservation and reconstruction of Carthusian monastery, one of the most significant monuments in Brno, which continues its existence as a centre of education and a dominating feature of the district. Its total utility area is 17 280 $m^{2,}$ including the 12 323 m^2 area for the purpose of teaching. Two lecture hall complexes (I and II) comprise a total of 880 seats.

The campus is one of the best equipped in BUT due to the latest technologies used. To fulfil the rest of the investment intention, the 'small castle' will be reconstructed. Its reconstruction can be carried out without any restrictions on the operation of the faculty and can be carried out as a part of the research project on IT security.

It is the Vice-Dean Ing. Zdeněk Bouša, who is in charge of the extremely important and demanding task of the faculty development and finance.

Ing. Zdeněk Bouša
Vice-Dean for Campus Development

II.6. Library at the FIT

In 2007, the FIT Library was getting ready for moving into new premises in the reconstructed Carthusian monastery.

The acquisition activities based on requirements of academic staff and students resulted in a total of **1764 new library items.** The library stock of the faculty was thus enlarged up to **11 200 library items.** The library took **72 foreign and Czech journals.**
In 2007, more than **9340 loans** from the FIT library collection were registered. **132** items were provided to the FIT employees through **international loan service** and **92** items through **inter-library lending**. In 2007, the opening hours of the library and study room were **43 hours a week.** A total of **3 724 users** from the whole Brno University of Technology were registered.

First-year students attended an **e-learning course** called **IVIG** , which provided them with basics of information literacy. They were taught how to use sources of information, institutions and services, and how to make use of available electronic sources of information for studies and research.

Traditionally, several **sales exhibitions of computer literature** were organized in 2007. For the first time, **a literary competition** for all BUT students was organized to find among them the author of the best sci-fi short story.

In December 2007, the library moved into the oldest rooms (from the 17th and 18th centuries) of the north-east part of the Carthusian monastery. The new arrangement of the library supports the independent work of students and corresponds to the recent university trends towards individualized studies. The whole area of the library is thus viewed as one large study room divided into a number of self-study rooms and group work rooms.

The library with its total area of **688 m^2** consists of an entrance hall with registration and information desks and a cloakroom. Another room offers free choice from books that are classified according to the **ACM classification system**. A quiet study room, a computer study room, a copy room, a part dedicated to fiction, two conference halls for students and a place for group work also form important parts of the library. There is a spacious store with compact bookshelves for 20,000 books. These representative rooms have provided FIT students, academic staff and other users from BUT with quality information, study and copy centres and with an interesting meeting point.

Finance for purchase of books in 2007

Czech books and periodicals	600 000 CZK
Financed from grants	340 000 CZK
Total	**940 000** CZK

Loans in 2007

Number of registered loans	9341
Number of inter-library and international inter-library loans	224

Other data - 2007

Number of users	3 724
New acquisitions	3 051

Summary of two academic periods

The library has existed since 1964 when the **Department of Computer Science and Engineering (DCSE)** was established. It was not fully open to students until 2004 when, after moving into larger rooms, the library could improve its services. In December 2004, the FIT Library joined the other libraries in BUT, the OPAC catalogue of **Aleph500** system and its operation was fully automated. In the same year, **library web pages** became available on http://www.fit.vutbr.cz/lib, where information on the library and its services and access to an on-line catalogue of all libraries at BUT, specialized databases as well as on-line journals and dictionaries is provided.

In 2005, the library was equipped with Gateway EM 700 plexi - an electromagnetic security system for books and all books were provided with security labels. **1,111** new **library items** were processed and the library stock of the faculty was enlarged up to **8,300 library items** and **55 journals.**

In 2006, the FIT Library introduced a more advanced version of **Aleph16** library system. The system users can follow their loans on line, prolong them, and book library items without going to the library. A lot of sales exhibitions of computer literature were organized in the same year. Apart from collaboration with Zoner Press, BEN – technical literature, another new collaboration started - with Computer press, a.s. and Mafra, a.s., which granted free journals and periodicals to our students.

In 2006, the acquisition activities resulted in a total of **1,136 new library items.** The library stock of the faculty was thus enlarged up to **9,500 library items.**

In December 2007, the library moved to the representative rooms of Cartusian monastery. The FIT library serves as professional source of information for educational, scientific and research activities of both teachers and students of the FIT and other users from the whole Brno University of Technology. The library collection of **11,200 library items** comprises unique foreign literature coming from significant publishing houses (Springer, Kluwer, Academic Press, O'Reilly). The library regularly takes high-quality international journals (ACM, IEEE Computer Society, Elsevier, IBM). The library users have access to important specialized databases (ACM Digital Library, IEEE Computer Sciences Digital Library, Lecture Notes in Computer Science, Safari Tech Books Online).

Mgr. Barbora Selingerová
Head of the Library

II.7. Annual Report - the Academic Senate of the FIT BUT in 2007

An important event took place in 2007: the elections to the Academic Senate of the FIT. That is why the annual report consists of two parts. One part concerns the AS working from October 2004 to October 2007. The other part concerns the new AS FIT elected on 17th October 2007 whose constituent session took place on 30th October 2007.

Activities of the AS FIT from 1st January 2007 to 30th October 2007

The Academic Senate comprised:

Doc. Ing. Jaroslav Zendulka, CSc.	*Chairman*
Ing. Petr Lampa	*Vice-Chairman and Chairman of the Chamber of Academic Staff*
Bc. Zdeněk Letko	*Vice-Chairman and Chairman of the Student Chamber*

Chamber of Academic Staff

Dr Ing. Otto Fučík (DCSY)
Ing. Radek Kočí, Ph.D. (DITS)
Ing. Bohuslav Křena, Ph.D. (DITS)
Doc. Ing. Jiří Kunovský, CSc. (DITS)
Ing. Petr Lampa (CC)
Prof. RNDr. Alexander Meduna, CSc. (DIFS)
Ing. Tomáš Vojnar, Ph.D. (DITS)
Doc. Ing. Jaroslav Zendulka (DIFS)

Student Chamber

Ing. Vítězslav Beran (Ph.D. programme IT)
Jan Filip (Bachelor's programme IT)
Bc. Michal Hejč (follow-up Master's programme MIN, till 19th June 2007)
Bc. Zdeněk Letko (follow-up Master's programme MIS)
Jan Richter (Bachelor's programme IT)

AS FIT Committees

Legislative Committee

Ing. Vítězslav Beran
Bc. Michal Hejč (till 19th June 2007)
Ing. Bohuslav Křena, Ph.D. – *Chairman*
Doc. Ing. Jiří Kunovský, CSc

Economic Committee

Ing. Vítězslav Beran
Dr. Ing. Otto Fučík
Ing. Petr Lampa – *Chairman*
Bc. Zdeněk Letko
Ing. Tomáš Vojnar, Ph.D.

Activities of the AS FIT

The Academic Senate gathered at six regular meetings in 2007 with an average attendance of 90%. All meetings had a quorum.

In the legislative section the Academic Senate (AS) approved the Electoral Rules and Rules of Procedure of the AS of the FIT in a version acceptable for the AS of BUT.
There was a disputable point coming from the AS of BUT and the management of BUT – namely the keeping of the membership in case a member switches from the Master to the Ph.D. study programme. In the end, the members of the AS of the FIT accepted this point in order to achieve an agreement on the document as a whole though they were aware of the disaccord it brings with. At the same time the AS of the FIT pointed at the discrepancy between this requirement and the present internal rules of BUT.
Disciplinary Rules of the FIT that are in compliance with those of BUT were agreed on.

The AS FIT also authorized some minor amendments of internal regulations and standards of the FIT. Competition procedures were introduced for the positions of Heads of Departments and CC whose form and content will be determined by the Dean, the incompatibility of the position of the Head with the positions of the Dean or Rector was stated, and at one with the four-year Dean´s term of office the term of office for the Heads of Departments was prolonged to four years, too. Minor amendments in the Dean´s regulations related to Scholarship Rules of BUT and Internal Regulations for Admission to the Bachelor study programme of the FIT were made.
The AS of the FIT approved the Regulations for Admission to the newly accredited four-year doctoral study programme. All proposals were discussed in the legislative section of the AS of the FIT and commented at a session.

In its first session, the economic section of the AS of the FIT agreed on principles of drawing funds in the period of provisional budget. It also agreed on the annual report on financial management of the FIT in 2006 and the budget proposal for 2007. In its October meeting, the AS discussed the drawing of the funds in 2007 and agreed on the division of financial reserves.

The Academic Senate also discussed and approved the Annual Report on the Activities of the FIT in 2006. One session was dedicated to the improvement of the co-ordination of the AS of the FIT with senators of BUT AS and the FIT management regarding the internal regulations and by-laws.

The AS of the FIT prepared the election of the new AS of the FIT and, as the representative of the FIT in the AS of BUT, had resigned the necessity of by-election for the Student Chamber of the AS of BUT arose as well. Both elections took place on 17th October 2007.
Ing. Bohuslav Křena, Ph.D., was the FIT Deputy in the Czech Council of Higher Education. In 2007 he took part in the activities of the expert committee for science and the expert committee for IT in Higher Education.

Activities of the AS FIT from 30th October to 31st December 2007

On 17th October 2007, the election for the AS of the FIT for 2007 – 2009 took place with the returns of 24,3% of registered voters (625 valid votes). The constituent session of the new AS of the FIT took place on 30th October 2007, with the pledge of new members of the AS, and the election of the Chairman and the Deputy Chairmen of the individual AS Chambers.

Ing. Petr Matoušek, Ph.D.	*Chairman*
Ing. Petr Lampa	*Vice-Chairman Chairman and Chairman of the Chamber of Academic Staff*
Patrik Halfar	*Vice-Chairman and Chairman of the Student Chamber*

Chamber of Academic Staff

Doc. Dr. Ing. Jan Černocký (DCGM)
Doc. Ing. Zdeněk Kotásek, CSc. (DCSY)
Ing. Petr Lampa (CC)
Ing Petr Matoušek, Ph.D. (DIFS)
Prof. RNDr. Alexander Meduna, CSc. (DIFS)
Ing. Richard Růžička, Ph.D. (DCSY)
Doc. Ing. Tomáš Vojnar, Ph.D. (DITS)
Doc. Ing. František Zbořil, CSc. (DITS)

Student Chamber

Patrik Halfar (Bachelor's programme IT)
Bc. Jan Navrátil (follow-up Master's programme MIN)
Ing. Václav Šimek (Ph.D. programme IT)
Vladimír Šmida (Bachelor's programme IT)

In its first session, the new AS of the FIT called for the election of candidates for the position of Dean of the FIT. The candidates: Doc. Dr. Ing. Petr Hanáček (nominated by DITS), Doc. Dr. Ing. Pavel Zemčík (nominated by DCGM) and Doc. Ing. Jaroslav Zendulka, CSc. (nominated by DIFS). The candidates were introduced to the academic community of the FIT on 22nd November 2007. In the second regular session of the AS on 27th November 2007, the candidates were introduced to the members of the AS and the election of the Dean took place. It was Doc. Ing. Jaroslav Zendulka, CSc. who won the absolute majority in the first round and was elected the main candidate for the position. This proposal was sent to the Rector.

Summary of two academic periods

The activities of the AS of the FIT in the last six years can be assessed as successful. At the beginning, the members had no experience with such work and made use of the experience of the AS members of the former FEECS BUT. Nevertheless, the AS of the FIT soon acquired the skill of communicating well with the faculty management with a certain flexibility towards the needs of the management, at the same time following closely the Higher Education Act as for the status of the AS - which might be considered a very positive feature as far as the faculty development is concerned.

The election of the new AS of the FIT for 2007 – 2009 and the election of the candidate for the position of the Dean for 2008 – 2011 completed the AS activities in 2007. We do hope that the new members of the AS of the FIT as well as the new management and the new Dean will carry on the successful development of the faculty.

More detailed information about the individual sessions of the AS FIT can be found in the minutes (http://www.fit.vutbr.cz/FIT/AS/), which form part of the Faculty Information System.

Doc. Ing. Jaroslav Zendulka, CSc.   Ing. Petr Matoušek, Ph.D.
Chairman AS FIT till 30th Oct 2007   Chairman AS FIT since 1st Nov 2007

II.8. Student Organizations

The Student Chamber of the Academic Senate of the FIT represents the students of the faculty and is elected by the student part of the FIT academic community. It co-operates with the Chamber of academic staff and approves internal regulations.

The Student Union of the FIT is an interest group of the students at the faculty. It is here to inform students about important activities and events at the FIT, and about all that is important for their successful study and life in Brno. It also contributes to various events of the FIT or BUT, co-operates with the Dean's Office and puts student representatives forward for different committees.

II.8.1. Activities of the Student Chamber of the Academic Senate (SCAS) in 2007

Student senators regularly attended meetings of the AS of the FIT. In October, elections to both Chambers of the AS of the FIT for 2007-2009 were held. Patrik Halfar, Jan Navrátil, Jan Richter, and Vladimír Šmida were elected to the SCAS for Bachelor and Master study programmes and Ing. Václav Šimek for Doctoral study programme. Patrik Halfar was elected the Chairman of the SCAS of the FIT at the constituent session. He was also nominated to the economic committee and other students (Ing. Václav Šimek, Vladimír Šmida) to the legislative committee. The SC AS of the FIT closely co-operated with the Student Union of the FIT.

II.8.2. Activities of the Student Union (SU) FIT in 2007

In early 2007, members of the SU participated in the FIT Open Day, answering questions asked by those interested in studies at the FIT. The SU members organized an SU FIT Ball, Open Day for Ph.D. students together with the 'Day of Science'. The SU FIT also co-organized some events with the SU of the Faculty of Electrical Engineering and Communication, e.g. the joint ball of the two faculties, or EEICT Competition. In 2007, too, the SU prepared a brochure containing useful information for the first-year students.

In the second half of 2007, elections for the SU FIT took place and the executive board for 2007/2008 was elected at the constituent session of the SU FIT - namely Patrik Halfar (Chairman), Radek Pyšný (1st deputy Chairman) and Filip Moravec (2nd deputy Chairman). A new auditing commission was elected and rules of procedure approved.

The SU took part in the annual international trade fair of higher education and life-long education called Gaudeamus, in LinuxAlt Conference and others. At the end of 2007, public discussion with the new Dean and his Vice-Deans and advisors was held.

Patrik Halfar
Chairman SU FIT

III. DEPARTMENTS AT THE FIT BUT IN 2007

III.1.Department of Information Systems

The **Department of Information Systems** is responsible for teaching the MSc specialisation **Information Systems**, which covers such fields as programming, formal languages and compilers, database and information systems, computer networks, formal specifications, internet and distributed applications. The objective is to make students familiar with theory, technologies and procedures used in information system development, and to teach them to develop such systems applying advanced development tools and technologies. Besides, the Department is also in charge of teaching courses in the Bc programme called **Information Technology** and in the Ph.D. programme called **Information Technology**.

Scientific and research activities of the Department are focused on database technology, implementation of information systems, management of software projects, and the theory of formal languages and compilers. The main areas of interest are the following ones:

- Object modelling, object-oriented databases, database design,
- knowledge discovery in databases,
- formal specifications of reactive and real-time systems,
- computer networks and communication protocols,
- information system implementation,
- software metrics and software project management,
- formal languages,
- functional languages.

The lectures in most of the courses are supplemented with projects or laboratory sessions, where students acquire hands-on experience and skills with the latest software packages, with software projects, and they learn basics of a teamwork and project management.

Staff

Head of Department
> Kolář Dušan, Doc. Dr. Ing.

Deputy Head of Department
> Meduna Alexander, Prof. RNDr., CSc.

Professor
> Honzík Jan M., Prof. Ing., CSc.
> Hruška Tomáš, Prof. Ing., CSc.
> Meduna Alexander, Prof. RNDr., CSc.
> Švéda Miroslav, Prof. Ing., CSc.

Associate professor
> Kolář Dušan, Doc. Dr. Ing.
> Zendulka Jaroslav, Doc. Ing., CSc.

Assistant professor
> Bartík Vladimír, Ing., Ph.D.
> Burget Radek, Ing., Ph.D.
> Kreslíková Jitka, RNDr., CSc.

Křivka Zbyněk, Ing., Ph.D.
Lukáš Roman, Ing., Ph.D.
Matoušek Petr, Ing., Ph.D.
Ryšavý Ondřej, Ing., Ph.D.

Assistant lecturer

Očenášek Pavel, Ing.
Ráb Jaroslav, Ing.
Rudolfová Ivana, Ing.
Rychlý Marek, Mgr.
Ščuglík František, Ing.
Trchalík Roman, Mgr.

Technical staff

Masopust Tomáš, Mgr., Ph.D.

Ph.D. student

Goldefus Filip, Mgr.
Husár Adam, Ing.
Chmelař Petr, Ing.
Jaša Petr, Ing.
Jirák Ota, Ing.
Krajíček Jiří, Ing.
Kunc Michael, Ing.
Kupčík Jan, Ing.
Kužela Alois, Ing.
Květoňová Šárka, Ing.
Martínek Zdeněk, Mgr.
Masařík Karel, Ing.
Nečas Ondřej, Ing.
Novotný Tomáš, Ing.
Peterka Ondřej, Ing.
Přikryl Zdeněk, Ing.
Ruttkay Ladislav, Ing.
Rychnovský Lukáš, Ing.
Stryka Lukáš, Ing.
Šárfy Martin, Mgr.
Techet Jiří, Ing.
Trmač Miloslav, Mgr.
Vrážel Dušan, Ing.
Weiss Petr, Ing.

Equipment

The Department of Information Systems can make use of two specialized laboratories of advanced communication technologies for teaching built with support of the Higher Education Development Fund.

In the first laboratory, intended predominantly for students of the Bachelor study programme, students familiarize with equipment for building classical data transmission nets, such as Ethernet (Gigabit Ethernet, 10G Ethernet), WiFi, and technologies for telecommunication transmissions, such as xDSL and ISDN

The other laboratory has a capacity of 15 workstations. Data cables are completely separated from the data of the academic network. Each workstation is equipped with two interfaces for

linking to the Ethernet and one WiFi interface. The laboratory mostly supports the Cisco Network Academy courses. That is why it is equipped with Cisco Systems active network elements: 18 routers - type 2620, 6 Catalyst 2950 switches, 3 Catalyst 2960 switches, 2 Catalyst 3560 switches and two Security Appliance ASA 5510. The laboratory also contains OptiView network analysers, EtherScope, NetTool and CableIQ, IntelliTone 200, MicroScanner Pro and MicroMapper cable testers. The equipment of both laboratories also serves practical training in the Computer systems and Network courses of the Master study programme.

Tuition

Abbr.	Course	Sem	Cr.	Hours	Lecturer
IAL	Algorithms	Z	5	39-0-0-0-13	Honzík Jan M., Prof. Ing., CSc.
IAL	Algorithms	L	5	39-0-0-0-13	Honzík Jan M., Prof. Ing., CSc.
AIS	Information Systems Analysis and Design	Z	5	39-0-0-0-13	Zendulka Jaroslav, Doc. Ing., CSc.
IDS	Database Systems	L	5	39-0-0-0-13	Zendulka Jaroslav, Doc. Ing., CSc.
DSKP	Data Warehouses (for FBM)	Z	6	26-0-0-26-0	Bartík Vladimír, Ing., Ph.D.
MW1	Microsoft Windows Desktop Systems	Z	5	26-0-0-26-0	Honzík Jan M., Prof. Ing., CSc.
IFJ	Formal Languages and Compilers	Z	5	39-0-0-0-13	Meduna Alexander, Prof. RNDr., CSc.
SSD	Formal Specifications of Computer-Based Systems	L	0	39-0-0-0-0	Švéda Miroslav, Prof. Ing., CSc.
FPR	Functional and Logic Programming	L	5	26-0-0-12-14	Kolář Dušan, Doc. Dr. Ing.
IIS	Information Systems	Z	4	26-0-0-0-13	Hruška Tomáš, Prof. Ing., CSc.
WAP	Internet Applications	L	5	39-0-0-0-13	Hruška Tomáš, Prof. Ing., CSc.
MPR	Project Management	L	5	26-0-0-4-22	Kreslíková Jitka, RNDr., CSc.
TID	Modern Theoretical Computer Science	Z	0	39-0-0-0-13	Meduna Alexander, Prof. RNDr., CSc.
NSB	Projecting, Administration and Security	L	5	26-0-0-26-0	Švéda Miroslav, Prof. Ing., CSc.
IPK	Computer Communications and Networks	Z	5	26-0-16-0-10	Švéda Miroslav, Prof. Ing., CSc.
IPK	Computer Communications and Networks	L	5	39-0-4-0-9	Švéda Miroslav, Prof. Ing., CSc.
MW4	Microsoft Enterprise Solutions	L	5	0-0-0-52-0	Kurečka Radomír, Ing.
PDB	Advanced Database Systems	Z	5	26-0-0-12-14	Kolář Dušan, Doc. Dr. Ing.

Abbr.	Course	Sem	Cr.	Hours	Lecturer
PIS	Advanced Information Systems	L	5	39-0-0-0-13	Hruška Tomáš, Prof. Ing., CSc
PKS	Advanced Communication Systems	Z	5	39-0-13-0-0	Švéda Miroslav, Prof. Ing., CSc.
IPP	Principles of Programming Languages and OOP	L	5	39-0-0-0-13	Kolář Dušan, Doc. Dr. Ing.
MW5	Programming .NET and C#	L	5	26-0-0-26-0	Honzík Jan M., Prof. Ing., CSc.
PDI	Distributed Application Environment	Z	5	39-0-0-13-0	Zendulka Jaroslav, Doc. Ing., CSc.
PDS	Data Communications, Computer Networks and Protocols	L	5	39-4-2-0-7	Švéda Miroslav, Prof. Ing., CSc.
CC2	LAN Switching and Design (CCNA3)	Z	5	26-0-26-0-0	Ryšavý Ondřej, Ing., Ph.D.
IRP	Information Systems Project Management	L	4	26-0-0-4-9	Kreslíková Jitka, RNDr., CSc.
IPM	Pascal and Modula Languages	L	4	39-0-0-0-13	Honzík Jan M., Prof. Ing., CSc.
MW2	Microsoft Windows Server Systems	L	5	26-0-0-26-0	Honzík Jan M., Prof. Ing., CSc.
CC1	Network Cabling and Routing (CCNA1+CCNA2)	L	5	26-0-26-0-0	Matoušek Petr, Ing., Ph.D.
ISA	Network Applications and Network Administration	Z	5	26-0-6-0-20	Švéda Miroslav, Prof. Ing., CSc.
MW3	Microsoft Windows Network Technologies	Z	5	0-0-0-52-0	Kurečka Radomír, Ing.
SLO	Complexity	L	5	26-0-0-0-26	Honzík Jan M., Prof. Ing., CSc.
SVD	Specification of Embedded Systems	Z	0	39-0-0-0-0	Švéda Miroslav, Prof. Ing., CSc.
SVS	Specification of Embedded Systems (in English)	L	5	39-0-0-6-7	Švéda Miroslav, Prof. Ing., CSc.
CC3	WAN Technology (CCNA4)	L	5	26-0-26-0-0	Matoušek Petr, Ing., Ph.D.
TJD	Programming Language Theory	Z	0	39-0-0-0-0	Hruška Tomáš, Prof. Ing., CSc.
ITW	Web Page Design	Z	5	26-0-0-12-14	Burget Radek, Ing., Ph.D.
ITW	Web Page Design	L	5	26-0-0-12-14	Burget Radek, Ing., Ph.D.
TWSP	Web Page Design (for FBM)	L	5	26-0-0-12-14	Burget Radek, Ing., Ph.D.
APD	Selected Topics on Language Parsing and Translation	Z	0	39-0-0-0-13	Kolář Dušan, Doc. Dr. Ing.

Abbr.	Course	Sem	Cr.	Hours	Lecturer
VKA	Selected Chapters on Algorithms	L	0	39-0-0-0-0	Honzík Jan M., Prof. Ing., CSc.
VPD	Selected Topics of Information Systems	L	0	39-0-0-0-0	Hruška Tomáš, Prof. Ing., CSc.
ZZD	Knowledge Discovery in Databases-Selected Topics	Z	0	39-0-0-0-13	Zendulka Jaroslav, Doc. Ing., CSc.
VYP	Compiler Construction (in English)	Z	5	39-0-0-0-13	Meduna Alexander, Prof. RNDr., CSc.
IZP	Introduction to Programming Systems	Z	7	39-0-0-12-14	Kreslíková Jitka, RNDr., CSc.
ZZN	Knowledge Discovery in Databases	Z	5	39-0-0-0-13	Zendulka Jaroslav, Doc. Ing., CSc.

Research projects

Innovative Approach to the Compiler Projects, FRVŠ MŠMT, FR673/2007/G1, 2007
Research leader: Rychnovský Lukáš
Team leaders: Křivka Zbyněk, Meduna Alexander

Modelling of Service-Oriented Architectures, FRVŠ MŠMT, FR2233/2007/G1, 2007
Research leader: Rychlý Marek
Team leaders: Weiss Petr, Zendulka Jaroslav

Multi-Information Technology, GAČR, GA201/07/0005, 2007-2009
Research leader: Meduna Alexander
Team leaders: Kolář Dušan, Lukáš Roman

Supporting of further education of young and prospective administrative officers of the faculty in the area of research, development, public relation and foreign services, library and other faculty development areas, MŠMT RP 262, 2007
Research leader Honzík Jan M.
Team leaders: Bouša Zdeněk, Lichtnegerová Katarína, Selingerová Barbora, Studená Michaela

Industrial Wireless ZigBee Network, FRVŠ MŠMT, FR2307/2007/G1, 2007
Research leader: Trchalík Roman
Team leaders: Očenášek Pavel, Švéda Miroslav

Preparation and Analysis of Multimedia and High Structured Data Databases, FRVŠ MŠMT, FR569/2007/G1, 2007
Research leader: Stryka Lukáš
Team leaders: Chmelař Petr, Zendulka Jaroslav

Framework for the Deductive Analysis of Embedded Software, GAČR, GA201/07/P544, 2007-2008
Research leader: Ryšavý Ondřej

Extended study support for Bachelor and Master study programmes Information Technology (in English) for the combined and distant forms of study, RP MŠMT, MŠMT RP 260, 2007
Research leader: Honzík Jan M.

Gaudeamus 2007 – Trade Fair of Higher Education, RP MŠMT, 2007
Research leader: Honzík Jan M.

Teaching of Formal Language Theory at the International Level of EU, FRVŠ MŠMT, FR762/2007/G1, 2007
Research leader: Techet Jiří
Team leaders: Masopust Tomáš, Meduna Alexander

Security-Oriented Research in Information Technology, CEZ MŠMT, MSM0021630528, 2007-2013
Research leader: Hruška Tomáš
Team leaders: Burget Lukáš, Burget Radek, Cvrček Daniel, Černocký Jan, Češka Milan, Drahanský Martin, Dvořák Václav, Fučík Otto, Hanáček Petr, Herout Adam, Hrubý Martin, Janoušek Vladimír, Jaroš Jiří, Kočí Radek, Kolář Dušan, Kořenek Jan, Kotásek Zdeněk, Kršek Přemysl, Křena Bohuslav, Kunovský Jiří, Martínek Tomáš, Masopust Tomáš, Matějka Pavel, Matoušek Petr, Meduna Alexander, Očenášek Pavel, Orság Filip, Růžička Richard, Ryšavý Ondřej, Sekanina Lukáš, Smrž Pavel, Strnadel Josef, Švéda Miroslav, Vojnar Tomáš, Zbořil František, Zbořil František V., Zemčík Pavel, Zendulka Jaroslav

Increasing of Qualification in the Area of Network Security and IP Telephony, CESNET, 215/2007, 2007-2008
Research leader: Matoušek Petr
Team leaders: Očenášek Pavel, Ráb Jaroslav, Trchalík Roman

Language and Development Environment for Microprocessor Design , MPO ČR, FT-TA3/128, 2006-2010
Research leader: Kurečka Radomír
Team leader: Hruška Tomáš

Toward International Learning Environment for Real-Time Safety-Critical Control Systems, EC EU, ATLANTIS-ILERT, 2006-2008
Research leader: Švéda Miroslav
Team leader: Ryšavý Ondřej

Curricula development, EACEA, 2006-2009
Research leader: Honzík Jan M.
Team leader: Drábek Vladimír

Virtual Laboratory of Microprocessor Technology Application, MŠMT, 2C06008, 2006-2011
Research leader: Černý Stanislav
Team leaders: Kadlec Jiří, Kolář Dušan

Research and Application of Systems for Large Data Analysis and Decision Support, MPO ČR, FT-TA3/162, 2006-2010
Research leader: Máčel Michal
Team leader: Hruška Tomáš

IT Professionals – Graduates Competitiveness Increase for European Labour Market, MSMT, CZ.04.1.03/3.2.15.1/0003, 2006-2007
Research leader: Hruška Tomáš
Team leader: Růžička Richard

Increasing of Qualification in the Area of Network Security and Wireless Technologies, CESNET, CESNET 2006, 2006-2007
Research leader: Matoušek Petr
Team leader: Čejka Rudolf, Ráb Jaroslav

Network Architectures for Embedded Systems, GACR, GA102/05/0467, 2005-2007
Research leader: Srovnal Vilém
Team leaders: Bílek Jan, Dvořák Václav, Švéda Miroslav

Integrated Approach to Education of DSP Students in the Field of Parallel and Distributed Systems
Systems, GACR, GA 102/05/H050, 2005-2008
Research leader: Gruska Jozef
Team leader: Češka Milan

Framework for Formal Specification and Prototyping of Network Applications of Information Systems, GACR, GA 102/05/0723, 2005-2007
Research leader: Švéda Miroslav
Team leaders: Hruška Tomáš**,** Zendulka Jaroslav

Research and Development of an Economically Acceptable Information and Security System aiming at building up and modernizing older blocks of flats, MPO ČR, FT-TA2/095, 2005-2007
Research leader: Dvořák Jaroslav
Team leader: Zezulka František

Optical Network in National Research and its New Applications - Programmable Hardware, CESNET, MSM6383917201, 2004-2010
Research leader: Novotný Jiří
Team leaders: Čejka Rudolf, Fučík Otto, Kořenek Jan, Martínek Tomáš, Matoušek Petr, Pečenka Tomáš, Smrčka Aleš, Vojnar Tomáš, Zemčík Pavel

Participation in Development of European SW Standards for Car Industry, AV ČR, 1ET400750406, 2004-2007
Research leader: Kadlec Jiří
Team leaders: Černý Stanislav, Hanzálek Zdeněk

ECTS/DS - National Coordinator-Team, EC EUA ECTS, 2004-2007
Research leader: Honzík Jan M.
Team leader: Zemčík Pavel

A Support Programme for Selected Study Programmes and their Development, MŠMT, MSMT, 2002-2007
Research leader: Honzík Jan M.

Development of Study Programmes as Part of Bologna Declaration, MŠMT, MŠMT RP, 2001-2007
Research leader: Honzík Jan M.

Co-operation

Co-operation within the Czech Republic

- Application Software, s.r.o. - RNDr. Lubomír Ptáček, co-operation in education and courses for the FIT, http://www.pocitacoveskoleni.cz
- VEMA, a.s., Ing. Michal Máčel, CSc. – co-operation in research and development, http://www.vema.cz.
- IBM CR – co-operation in education promotion and employment of the graduates from the FIT, http://www.ibm.com/cz
- Computer Press, Connect! (a journal), Lukáš Honek - analysing and testing network equipment, www.connect.zive.cz.
- Department of Automation and Measurement FEI, VŠB - Technical University Ostrava, Prof. Vilém Srovnal – co-operation in the field of embedded systems, http://www.fei.vsb.cz/www/katedry/455/profil_kat.html.
- Department of Control Technology FEL, ČVUT Praha – Doc. Jan Bílek – co-operation in the field of embedded systems, http://dce.felk.cvut.cz/pub
- Grisoft, Ing. Karel Oblouk, Ph.D. – topics of diploma theses and consultations, research in antivirus protection, http://www.grisoft.cz
- InterSystems B.V., Ing. Daniel Kutač – provision of the Caché system and support within Caché Campus program, http://www.intersystems.cz
- Allium, s.r.o., Ing. Zdeněk Opršal – co-operation in the field of Knowledge-Based Management Methods for SW Development and Maintenance, http://www.allium.cz
- STAVCERT, s.r.o. Praha, Ing. Jiřina Štěpánská, chief auditor QMS, EMS, co-operation in the field of quality assessing of the process of the development of information systems with the aim of the system certification for quality management, http://www.stavcert.cz.
- Department of Information and Knowledge Engineering, VŠE, Praha, Ing. Vojtěch Svátek, Dr. - scientific co-operation, project submitting, http://www.vse.cz/
- Brno Trade Fair, a.s., Mgr. Gabriela Sochnová – co-organizer of voting in the Cristal Disc competition in 2007, http://www.bvv.cz/

- Cisco Network Academy, Karol Kniewald – co-operation in the implementation of CCNA courses into the programme of tuition, http://cisco.netacad.net
- Profinit, s.r.o., M. Franc – co-operation, the 'Thesis of the Year' competition and specialized lectures, http://www.profinit.cz
- ANF DATA, s.r.o., local affiliate in Brno, Ing. Petr Šebesta, diploma theses – topics and consultations, http://www.anfdata.cz
- Faculty of Informatics, Masaryk University Brno, Ing. Matěj Lexa, Ph.D. - co-operation in the field of bioinformatics, http://www.fi.muni.cz/fi
- LBMS, s.r.o. Praha, František Solar, Strategic Account Manager, co-operation in the field of process management and application for the support of process management, http://www.lbms.cz
- ICZ a.s., Ing. Miroslav Rybníček, co-operation in the field of project management and application for the support of process management, http://www.i.cz/
- Institute of Information Theory and Automation, Academy of Science of the Czech Republic (http://www.utia.cas.cz/), Praha, Ing. Jiří Kadlec CSc. – joint project "Virtual Laboratory of Microprocessor Technology Application", MSMT, 2C06008, http://www.vlam.cz/.
- UNIS spol. s r.o., R&D, Brno, Ing. Stanislav Černý – the research leader of the joint project " Virtual Laboratory of Microprocessor Technology Application, MSMT, 2C06008", http://www.vlam.cz/.
- Unicorn a.s., Ing. Vít Urban - topics and consultations – Bachelor projects and diploma theses, http://www.unicorn.eu/cz/.
- Ministry of Defence, CR, Agency of Informatics Development, Ing. Bohuslav Vít, risk management and quality in IS development, http://www.army.cz/.

International Co-operation

- University of Arizona, Tuscon, Arizona, USA, Prof. Jerzy Rozenblit – co-operation in the field of embedded systems and formal specifications, http://www.ece.arizona.edu.
- University of Stirling, Stirling, Scotland, UK, Prof. Charles Rattray – co-operation in the field of formal specifications, http://www.cs.stir.ac.uk.
- Embry Riddle Aeronautical University, Daytona Beach, Florida, USA, Prof. Andrew Kornecki, co-operation in the field of embedded systems: ATLANTIS-ILERT, http://www.erau.edu.
- AGH University of Science and Technology, Krakow, Poland, Prof. Wojciech Grega - co-operation in the field of embedded systems: ATLANTIS-ILERT, http://aq.ia.agh.edu.pl.
- Université Joseph Fourier, Grenoble, France, Prof. Jean Marc Thiriet - co-operation in the field of embedded systems: ATLANTIS-ILERT, www.eie-surveyor.org.
- IBOK a.s., Bratislava, Slovak Republic, Ing. Tibor Šmida, Ph.D., co-operation on creation of risk evaluation methods, http://www.ibok.sk/.

Visits of Staff Members to Foreign Institutions

- Burget Radek, Ing., Ph.D., Universidad de Valladolid, Valladolid, Spain, ES, 7 days
- Honzík Jan M., Prof. Ing., CSc., European Commission - Directorate General for Education and Culture, EC-DGEC, Rue de la Loi 200, Brussels, BE, 3 days
- Honzík Jan M., Prof. Ing., CSc., EUROPEAN COMMISSION, EC EUA ECTS, EUA Brussels Office - Rue de la Loi 42, B-1040 Brussels, BE, 3 days

- Honzík Jan M., Prof. Ing., CSc., Technological Educational Institute of Crete, Heracleion, Greece, Rhodos Greece, GR, 5 days
- Chmelař Petr, Ing., University of Glasgow, UofG, University Avenue, G12 8QQ Glasgow, GB, 9 days
- Matoušek Petr, Ing., Ph.D., E&EM Academy Conference 2007, Istanbul, TR, 5 days
- Meduna Alexander, Prof. RNDr., CSc., Universidad de Valladolid, Valladolid, Spain, ES, 9 days
- Meduna Alexander, Prof. RNDr., CSc., National Taiwan University, NTU, No. 1, Sec. 4, Roosevelt Road, 10617 Taipei, TW, 15 days
- Meduna Alexander, Prof. RNDr., CSc., Universidad de Buenos Aires, Universidad de Buenos Aires, Pabellón I- Ciudad Universitaria, AR, 17 days
- Meduna Alexander, Prof. RNDr., CSc., Universidad de Valladolid, Segovia, Spain, ES, 8 days
- Švéda Miroslav, Prof. Ing., CSc., International Assoc. of University Research and Industry, Fort de France, Martinique, Daytona Beach, USA, MQ, 14 days
- Švéda Miroslav, Prof. Ing., CSc., European Commission EU – Education and Training, EU-EC-ET, Brussels, BE, 5 days
- Techet Jiří, Ing., 19th European Summer School in Logic, Language and Information, Trinity College, Dublin, Ireland, IE, 14 days
- Techet Jiří, Ing., University of Maribor, UM, Slomškov trg 15, 2000 Maribor, SI, 2 months
- Zendulka Jaroslav, Doc. Ing., CSc., Universidad de Valladolid, Valladolid, Spain, ES, 7 days

Agreements

- Agreement on Professional Aid, STAVCERT Praha, s r.o.
- A Bilateral Agreement on Student and Teacher Mobility within the LLP Erasmus Programme Made with La Universidad de Valladolid, http://www.uva.es/, ES
- Agreement on co-operation within the CCIE incubator with CELN, 2007-,
- Agreement on co-operation within the Bootcamp training, Cisco CR spol. s r. o, 2007
- An Agreement with ApS Brno, spol., s. r.o., 2002 - .
- An Agreement with Vema a.s., 2002 -.
- An Agreement with Profinit, s.r.o., 2006

Memberships in International Organizations and Societies

- Petr Chmelař, Ing.
  - IEEE Computer Society
  - IEEE Computational Intelligence Society
- Honzík Jan M., Prof. Ing., CSc.
  - IGIP
  - IFIP
  - ECTS/DS
- Hruška Tomáš, Prof. Ing., CSc.
  - ACM
- Kolář Dušan, Doc. Dr. Ing.,
  - ACM

- Očenášek Pavel, Ing.,
  - IEEE Computer Society
  - ACM
- Ryšavý Ondřej, Ing., Ph.D.,
  - IEEE Computer society
  - Formal Methods Europe (FME)
- Ščuglík František, Ing.
  - IEEE Computer Society
- Švec Jaroslav, Ing.,
  - The European Higher Education Society
- Švéda Miroslav, Prof. Ing., CSc.
  - IEEE Computer Society
  - IEEE Technical Committee on Engineering of Computer-Based Systems (ECBS)
  - IFIP WG10.1
- Zendulka Jaroslav, Doc. Ing., CSc.
  - ACM

Publications

Presentations, Electronic Documents:

Matoušek, P., Ryšavý, O.: A Path to Become a Skillful CCNP Expert During your University Studies, Istanbul, TR, 2007, p. 1

Lectures:

Matoušek, P.: Automated Network-Wide Security Analysis, Brno, CZ, 2007, p. 25

Matoušek, P.: Network Security by Cisco, Slavonice, CZ, 2007, p. 34

Abstracts:

Chmelař, P., Zendulka, J.: Distributed Visual Sensor Network Fusion, 4th Joint Workshop on Multimodal Interaction and Related Machine Learning Algorithms, Brno, CZ, 2007, p. 2

Monographies:

Masopust, T.: Formal Models: Regulation and Reduction, Brno, CZ, FIT VUT, 2007, p. 103, ISBN 978-80-214-3550-6

Conference Papers:

Beran, V., Herout, A., Hradiš, M., Chmelař, P., Potúček, I., Sumec, P., Zemčík, P.: Video Summarization at Brno University of Technology, In: ACM Multimedia, Augsburg, DE, 2007, p. 4

Burget, R.: Layout Based Information Extraction from HTML Documents, In: ICDAR 2007, Curitiba, BR, IEEE CS, 2007, p. 5

Burget, R.: Vizuální segmentace elektronických dokumentů (Visual Document Segmentation), In: Znalosti 2007, Ostrava, CZ, VSB, 2007, pp. 155-166, ISBN 978-80248-1279-3

Grega, W., Kornecki, A., J., Švéda, M., Thiriet, J.: Developing an Interdisciplinary and Multinational Software Engineering Curriculum, In: Proceedings of the International Conference on Engineering Education, Coimbra, PT, 2007, p. 4

Honzík, J., M., Skokanová, J.: Internet-Aided Audio-Video Transmission and Storage of Lectures at FIT BUT in the Czech Republic, Philosophy and Technology, In: New Horizons in Industry, Business and Education, Technological Educational Institute of Crete, GR, TEI of Crete, 2007, pp. 128-131, ISBN 978-960-88785-4-9

Chmelař, P., Hernych, R., Kubíček, D.: Interactive Visualization of Data-Oriented XML Documents, In: Advances and Innovations in Systems, Computing Sciences and Software Engineering, City, US, 2007, p. 4

Chmelař, P., Stryka, L.: Interactive Mining on Hierarchical Data, In: Proceedings of the 13th Conference STUDENT EEICT 2007 Volume 4, Brno, CZ, VUT v Brně, 2007, pp. 410-414, ISBN 80-214-3410-3

Chmelař, P., Stryka, L.: Intuitive and Interactive Mining, In: ZNALOSTI 2007, Proceedings of the 6th annual conference, Ostrava, CZ, VŠB-Technical University of Ostrava, 2007, pp. 308-311, ISBN 9788024812793

Chmelař, P., Zendulka, J.: Visual Surveillance Metadata Management, In: Eighteenth International Workshop on Database and Expert Systems Applications, Regensburg, DE, ICSP, 2007, pp. 79-83, ISBN 978-0-7695-2932-5

Kolář, D., Křivka, Z., Schönecker, R.: Component-based Design of Embedded Systems with FPGA Support, In: Proceedings of XXIXth International Autumn Colloquium Advanced Simulation of Systems, Ostrava, CZ, MARQ, 2007, pp. 167-172, ISBN 978-80-86840-34-5

Kornecki, A., J., Hilburn, T., B., Grega, W., Švéda, M., Thiriet, J.: ILERT - International Learning Environment for Real-Time Software Intensive Control Systems, In: Proceedings of RTS 2007 - International Conference on Computer Science and Information Technology - Real-Time Software, Wisla, PL, IEEE CS, 2007, pp. 1-6, ISBN 0018967094

Krajíček, J.: Homogenní rozšířené multigramatiky a jejich redukce (Homogenous Multicontinuous Grammars and Their Reduction), In: SVOČ 2007 - Soutěž vysokoškoláků ve vědecké odborné činnosti v matematice (University Students Scientific Competition), Olomouc, CZ, UPAL, 2007, pp. 33-33

Krajíček, J.: Multigrammars and their Applications, In: Proceedings of the 13th Conference STUDENT EEICT 2007, Volume 2, Brno, CZ, FEKT VUT, 2007, pp. 207-209, ISBN 978-80214-3410-3

Křivka, Z., Lorenc, L., Schönecker, R.: A Note on the Parsing of Complete VHDL-2002, In: Information Systems and Formal Models (Proceedings of 2nd International Workshop on Formal Models (WFM'07)), Opava, CZ, SLU, 2007, pp. 245-248, ISBN 978-807248-006-7

Křivka, Z., Lorenc, L., Schönecker, R.: Vývoj vestavěných systémů s FPGA na konceptuální úrovni (Development of FPGA embedded systems on a conceptual level), In: Conference proceedings: ZVŮLE 2007, Brno, CZ, FEKT VUT, 2007, pp. 176-179, ISBN 978-80-214-3468-4

Křivka, Z., Meduna, A., Smrček, J.: n-Right-Linear-Rewriting Systems, In: Third Doctoral Workshop on Mathematical and Engineering Methods in Computer Science (MEMICS 2007), Znojmo, CZ, 2007, pp. 105-112, ISBN 978-80-7355-077-6

Křivka, Z., Meduna, A.: Generalized-Rewriting Systems of Finite Index, In: Information Systems and Formal Models (Proceedings of 2nd International Workshop on Formal Models (WFM'07), Opava, CZ, SLU, 2007, pp. 197-204, ISBN 978-807248-006-7

Křivka, Z.: Deterministic-Rewriting Systems, In: Proceedings of the 13th Conference STUDENT EEICT 2007, Volume 4, Brno, CZ, FEKT VUT, 2007, pp. 386-390, ISBN 978-80214-3410-3

Kunc, M.: Web Mining, In: Proceedings of the 13th Conference STUDENT EEICT 2007 Volume 4, Brno, CZ, VUT v Brně, 2007, pp. 391-395, ISBN 80-214-3410-3

Květoňová, Š., Kreslíková, J.: An Interactive Software Process Management Using Petri Nets, In: Proceedings of the 16th International Conference on Systems Science, Wroclaw, PL, PWR WROC, 2007,pp. 334-341, ISBN 978-83-7493-340-7

Květoňová, Š., Kreslíková, J.: Modelling of Project Management by Petri Nets, In: Proceedings of the 28th International Scientific School, Wroclaw, PL, PWR WROC, 2007, pp. 149-156, ISBN 978-83-7493-346-9

Květoňová, Š., Kreslíková, J.: Project Management Processes Modelling Using Petri Nets, In: Proceedings of 21th European Simulation and Modelling Conference ESM'2007, Malta, MT, 2007, pp. 1-5

Květoňová, Š., Martínek, Z., Kreslíková, J.: Modelling of Software Products Deployment by PMBOK, In: Proceedings of the 8th International Carpathian Control Conference, Košice, SK, 2007, p. 20-23, ISBN 978-80-8073-805-1

Květoňová, Š., Martínek, Z.: Statistical Process Control in Software Engineering, In: Proceedings of the 13th conference Student EEICT 2007, Brno, CZ, 2007, pp. 1-4, ISBN 9788021434103

Květoňová, Š., Martínek, Z.: A Unified Approach to Modelling of Software Project Management Processes, In: Proceedings of 9th International Conference ISIM'07, Opava, CZ, SU, 2007, pp. 20-27, ISBN 978-80-7248-006-7

Lukáš, R., Meduna, A.: General Multigenerative Grammar Systems, In: Information Systems and Formal Models ISIM, WFM '07, Hradec nad Moravicí, CZ, SLU, 2007, pp. 205-212, ISBN 978-80-7248006-7

Masařík, K., Hruška, T.: Structural Equivalence between Architectural Descriptive and Hardware Languages, In: A proceedings volume from the 4th International Conference on Cybernetics and Information Technologies, Systems and Applications CITSA 2007, Florida, US, 2007, pp. 40-45, ISBN 1-934272-10-8

Masopust, T., Meduna, A.: Descriptional Complexity of Generalized Forbidding Grammars, In: Proceedings of 9th International Workshop on Descriptional Complexity of Formal Systems, High Tatras, Slovakia, SK, UPJS, 2007, pp. 170-177, ISBN 978-80-7097-688-3

Masopust, T., Meduna, A.: Descriptional Complexity of Grammars Regulated by Context Conditions, In: LATA 2007 Pre-proceedings. Reports of the Research Group on Mathematical Linguistics 35/07, Universidade Rovira i Virgili, Tarragona, Spain, ES, 2007, pp. 403-411

Masopust, T.: A Note on the Descriptional Complexity of Semi-Conditional Grammars, In: Information Systems and Formal Models ISIM, WFM '07, Hradec nad Moravicí, CZ, 2007, pp. 213-218, ISBN 978-80-7248-0067

Masopust, T.: Generalized Forbidding Grammars with Linear Productions, In: Third Doctoral Workshop on Mathematical and Engineering Methods in Computer Science (MEMICS 2007), Znojmo, CZ, Novotny, 2007, pp. 121-126, ISBN 978-80-7355-077-6

Masopust, T.: Scattered Context Grammars Can Generate the Powers of 2, In: Proceedings of the 13th Conference STUDENT EEICT 2007, Volume 4, Brno, CZ, FEKT VUT, 2007, pp. 401-404, ISBN 978-80214-3410-3

Meduna, A., Lukáš, R., Krajíček, J.: Homogeneous Multicontinuous Grammars and Their Reduction, In: MEMICS 2007 Proceedings, Znojmo, CZ, Novotny, 2007, pp. 90-96, ISBN 978-80-7355-077-6

Meduna, A., Techet, J.: Maximal and Minimal Scattered Context Rewriting, In: FCT 2007 Proceedings, Budapest, HU, Springer, 2007, pp. 412-423, ISSN 0302-9743

Meduna, A., Techet, J.: Reduction of Scattered Context Generators of Sentences Preceded by Their Leftmost Parses, In: Proceedings of 9th International Workshop on Descriptional Complexity of Formal Systems, High Tatras, SK, UPJS, 2007, pp. 178-185, ISBN 978-80-7097-688-3

Očenášek, P., Šimek, V.: Determining Location of Target Within the Indoor Location System, In: Proceedings of the 16th International Conference on Systems Science: Volume III, Wroclaw, PL, 2007, pp. 168-176, ISBN 978-83-7493-341-4

Očenášek, P., Trchalík, R.: Reasoning About Security Protocols in the ZigBee Standard, In: Proceedings of the 8th International Carpathian Control Conference, Košice, SK, TU v Košiciach, 2007, p. 4, ISBN 80-8073-805-1

Očenášek, P.: Analysis of the Network Communication With OPNET, In: Proceedings of the 16th International Conference on Systems Science: Volume II, Wroclaw, PL, 2007, pp. 312-317, ISBN 978-83-7493-340-7

Očenášek, P.: On the Design of Protocols in Electronic Commerce, In: MIC 2007 Conference Proceedings, Portorož, SI, 2007, p. 6, ISBN 978-961-6573-88-7

Očenášek, P.: Protocols in Electronic Commerce, In: Management, Economics and Business Development in the New European Conditions, Brno, CZ, CERM, 2007, p. 10, ISBN 80-7204-532-7

Očenášek, P.: Tools for Analysis and Simulation of Protocol Communication, In: EDS '07 IMAPS CS International Conference Proceedings, Brno, CZ, VUT v Brně, 2007, pp. 87-91, ISBN 978-80-214-3470-7

Očenášek, P.: Wardriving: Detecting, Attacking, Securing, In: Proceedings of the 8th International Carpathian Control Conference, Košice, SK, TU v Košiciach, 2007, p. 4, ISBN 80-8073-805-1

Pavlík, M., Háze, J., Vrba, R., Švéda, M.: Smart Differential Pressure Sensor, In: Proceedings ICINCO 2007: Signal Processing, Systems Modelling and Control, Angers, FR, INSTICC, 2007, pp. 244-248, ISBN 978-972-886584-9

Peterka, O., Ryšavý, O., Lorenc, V., Osovský, M., Škarvada, L.: Can Objects Have Dependent Types?, In: Proceedings of 3rd Doctoral Workshop on Mathematical and Engineering Methods in Computer Science (MEMICS 2007), Znojmo, CZ, Novotny, 2007, pp. 173-180, ISBN 978-80-7355-077-6

Rychlý, M.: Component Model with Support of Mobile Architectures, In: Information Systems and Formal Models, Opava, CZ, SU, 2007, p. 55-62, ISBN 80-7248-006-7

Rychnovský, L.: Parsing of Context-Sensitive Languages, In: Information Systems and Formal Models (Proceedings of 2nd International Workshop on Formal Models (WFM'07), Opava, CZ, SLU, 2007, p. 219-226, ISBN 978-807248-006-7

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Meduna, A., Techet, J.: Canonical Scattered Context Generators of Sentences with Their Parses, In: Theoretical Computer Science, vol. 2007, No. 389, Paris, FR, pp. 73-81, ISSN 0304-3975

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Research Projects:

Očenášek, P.: Ontology and semantic web, Brno, CZ, 2007, p. 6

Ryšavý, O.: Framework for the Deductive Analysis of Embedded Software: Initial technical report, Brno, CZ, DIFS FIT VUT, 2007, p. 20

Dissertations:

Křivka, Z.: Rewriting Systems with Restricted Configurations, Brno, CZ, 2007, p. 98

Masopust, T.: Regulated Formal Models and Their Reduction, Brno, CZ, 2007, p. 71

Products

CSSBox Rendering Engine, authorized software, 2007
Author: Burget Radek

Kalman Filter (Java), authorized software, 2007
Author: Chmelař Petr

Instruction Set Tools Lissom, authorized software, 2007
Authors: Hruška Tomáš, Kolář Dušan, Lukáš Roman, Masařík Karel

Platform for Evaluation of Image Classifiers, authorized software
Authors: Beran Vítězslav, Herout Adam, Hradiš Michal, Chmelař Petr, Juránek Roman, Šilhavá Jana, Zemčík Pavel

Seminars

10.12.2007	On a New Book about Compilers by the Author - A. Meduna and the FIT library
3.12.2007	Information Retrieval - P. Chmelař
26.11.2007	A Component Model with Support of Mobile Architectures and Formal Description - M. Rychlý
19.11.2007	Modelling of Service Oriented Architecture: From Business Process to Service - P. Weiss
12.11.2007	Pronunciation of American English - A. Meduna
5.11.2007	Multigrammars in role of regulated grammar systems - J. Krajíček, R. Lukáš
29.10.2007	Impact of Configuration Restrictions on Generative Power of Rewriting Systems - Z. Křivka, T. Masopust
22.10.2007	Automated Network-Wide Security Analysis - P. Matoušek
15.10.2007	Possibilities of Research and Development Support in Programmatic Term of 2007-2013 - Š. Květoňová
8.10.2007	Clustering of protein sequences - I. Rudolfová
16.4.2007	Implementation of extendable document warehouse - P. Lampa
2.4.2007	Scattered Context Generators of Sentences with Their Parses - J. Techet
26.3.2007	Selfsorting Automata - A. Meduna, T. Masopust
19.3.2007	Regulated Pushdown Automata: Use in Practice - D. Kolář, L. Rychnovský
12.3.2007	Formal Semantics of Component-Oriented Systems - M. Rychlý
5.3.2007	Formal models over free groups - P. Blatný
26.2.2007	Transformation RTL descriptions to ISAC Language - K. Masařík

| 19.2.2007 | On Properties that Modify the Power of Formal Models - R. Bidlo |
| 12.2.2007 | Integrating Heterogeneous Data Sources in the Web - M. Kunc |

Other Activities

- Organization of the "10th Information Systems Implementation and Modelling" (ISIM 2007), which is an international conference on theory, modelling techniques and tools, methods of information systems design and database systems.
- Doc. Zendulka was a member of the evaluation board in 'Database Product of 2007' competition organized by the journal of 'Database World' (Databázový svět).
- Prof. Honzík was the chief executive of the evaluation board and Prof. Hruška and Doc. Zendulka were members of the academic part of the evaluation board of the Cristal Disc Competition within Invex 2007 - an international trade fair on IT. Dr. Burget was in charge of information support.

Summary of two academic periods

During the six years of the existence of the faculty, DIFS became a stabilized department specialized in tuition and research in the area of development of information systems, the methods, process control, as well as technology of implementation (including communication and network technologies), a department that is also specialized in research and tuition of theory of information systems.

The Department provides tuition of a number of subjects and is in charge of the Information Systems specialization in the Master study programme. It also participates in several academic initiatives of significant companies (IBM, Oracle, InterSystems) and co-operates with the companies to offer students optional courses suitable for possible future certification (Microsoft, Cisco). It also makes most of the possibility of having lectures from invited experts. The fact that the faculty participated in Cisco Networking Academy (CNA) helped to start a specialized laboratory focused on tuition and research in computer network and communications. Its equipment includes active network elements, WiFi network elements, HW network analysers and testers for structured cabling.

The research at the department is focused on databases, data stores, OLAP and data mining, on software project management for SW products development, on mathematically-oriented study of formal systems and models based on grammars and automata, on communication architectures for security applications and on parallel HW-SW design.

III.2. Department of Intelligent Systems

The **Department of Intelligent Systems** is responsible for teaching courses specialized in Intelligent Systems. This branch of study synthesizes knowledge from several scientific fields, such as artificial intelligence, system modelling, simulation and formal analysis of system models, neural nets, genetic algorithms and fuzzy systems. The common feature here are the non-traditional ways of computing, which provide solutions of problems with highly sophisticated, indefinite and dynamic character of the processes.

The graduates will become experts in system modelling, and creation, including signal recognition (speech and visual image processing), processing of natural language and decision-making based on inaccurate and incomplete information. They will also master intelligent control systems, intelligent information systems and intelligent robots.

The research activity of the Department is focused first of all on Intelligent Systems, but attention is also paid to systems for specific applications, computer-based systems, interface design and the use of multilevel parallelism. Further fields of interest are: integration of components into embedded applications, simulation and prototyping of different configurations, and formal specification and verification of the design.

The majority of subjects are supplemented with projects and laboratory work, in which students gain practical experience with the latest software products and systems.

Staff

Head of Department
>   Hanáček Petr, Doc. Dr. Ing.

Deputy Head of Department
>   Zbořil František V., Doc. Ing., CSc.

Professor
>   Češka Milan, Prof. RNDr., CSc.

Associate professor
>   Cvrček Daniel, Doc. Ing., Ph.D.
>   Hanáček Petr, Doc. Dr. Ing.
>   Kunovský Jiří, Doc. Ing., CSc.
>   Vojnar Tomáš, Doc. Ing., Ph.D.
>   Zbořil František V., Doc. Ing., CSc.

Assistant professor
>   Drahanský Martin, Ing., Dipl.-Ing., Ph.D.
>   Hrubý Martin, Ing., Ph.D.
>   Janoušek Vladimír, Ing., Ph.D.
>   Kočí Radek, Ing., Ph.D.
>   Křena Bohuslav, Ing., Ph.D.
>   Orság Filip, Ing., Ph.D.
>   Peringer Petr, Dr. Ing.
>   Zbořil František, Ing., Ph.D.

Assistant lecturer
>   Kraus Michal, Ing.
>   Kumpošt Marek, Mgr.
>   Martinek David, Ing.

Rozman Jaroslav, Ing.
Smrčka Aleš, Ing.
Šátek Václav, Ing.
Ph.D. student
Bouška Petr, Mgr.
Drozdová Martina, Ing.
Dvořák Radim, Ing.
Grulich Lukáš, Ing.
Holík Lukáš, Mgr.
Hýsek Jiří, Ing.
Jurka Pavel, Ing.
Kaluža Vlastimil, Ing.
Kironský Elöd, Ing.
Kislinger Pavel, Ing.
Kopřiva Jan, Ing.
Lodrová Dana, Ing.
Malinka Kamil, Mgr.
Mazal Zdeněk, Ing.
Michlovský Zbyněk, Ing.
Mucha Martin, Mgr.
Nagy Jan, Ing.
Novosad Petr, Ing.
Pecho Peter, Ing.
Pindryč Milan, Ing.
Polášek Petr, Ing.
Rogalewicz Adam, Mgr.
Samek Jan, Ing.
Sehnalová Pavla, Ing.
Schäfer Jiří, Ing.
Skřivánek Roman, Ing.
Zadina Martin, Ing.

Equipment

There is a laboratory of robots and biometric systems at the Department. Its equipment contains 11 pieces of Trilobot robot, 2 Robosapien robots, a Mitsubishi RV-6SL robot, 10 Logitech web cameras, fingerprint scanners (thermal, optical and capacitive), an AGA Thermovision thermocamera, a stereocamera, 6 Axis camera systems, a card reader, meteostation, a range of various sensors (pressure sensors, a CO+LPG detector, photoresistor, thermal sensors) and other support equipment (a soldering set, chargers, oscilloscope, power sources, etc.) The laboratory is used for tuition but, at the same time, it serves the research grants and research projects. The detached laboratory of robots and biometric systems was equipped with a Mitsubishi Melfa RV-6SL robotic arm and Schunk PG70 gripper, and with a camera system for the robotic arm.

There is a BUSLab laboratory at the department, which serves mainly the research in system security. There are: 16 computer workstations (OfficePro 5000D), equipment for projects dedicated to wireless network (antennas, PCMCIA cards, Access Points), VoIP, chip cards and supertokens. The laboratory also contains several routers, an 8 port Belkin Gigabit switch, two GemPC readers, an Omnikey CardMan 4000 reader, two contactless card readers, AMC DV103003 - development kit, GemXPress III development equipment, Scopemeter Fluke

123S and other supporting equipment (a laboratory power source, a micro-soldering iron with an advanced stabilization of tip temperature, UPS, measuring devices, etc.). A new server was purchased at which an internet presentation of the laboratory and project-related data store were placed. Projects that are being worked on at present are the following: RepuNET (reputation-based systems in Wifi network), Supertoken (a mechanism for electronic transactions security) and VoIP (telephone tapping and telephone conversation security).

A computer classroom/laboratory for teaching modelling, simulation, and geographical information systems forms another component of the department. This classroom is a result of FRVŠ 2656/2006 grant. It is meant for the following subjects: Modelling and Simulation (IMS), Geographical Information Systems (GIS), Computer Hardware (IPR), Simulation Tools and Techniques (SNT) and Formal Analysis and Verification (FAV). The classroom is equipped with 40 Core2Duo Computers, 2GiB RAM.

ArcGIS programmes (a licence for 2x25 computers) and Dymola v. 6.0b (a licence for the whole classroom) have been installed. Moreover, other freeware is at the user´s disposal.

Two high-performance computers were purchased in 2007: one with 8 processors and 16 GiB RAM, the other with 4 processors and 32 GiB RAM. They are used for high-performance computing, especially in the field of formal verification, theory of games, and simulation. The Department uses the equipment of the Computer Centre.

Tuition

Abbr.	Course	Sem	Cr.	Hours	Lecturer
AGS	Agent and Multiagent Systems	L	5	26-0-0-13-13	Zbořil František, Ing., Ph.D.
IAS	Assembly Languages	Z	6	39-0-0-13-0	Zbořil František V., Doc. Ing., CSc.
BMS	Wireless and Mobile Networks	Z	5	39-0-0-0-13	Hanáček Petr, Doc. Dr. Ing.
BZA	Secure Devices	L	5	39-0-0-0-13	Cvrček Daniel, Doc. Ing., Ph.D.
BIS	Information System Security	Z	5	39-0-0-0-13	Hanáček Petr, Doc. Dr. Ing.
BID	Information system security and cryptography	L	0	39-0-0-0-4	Hanáček Petr, Doc. Dr. Ing.
BIO	Biometric Systems	Z	5	39-0-6-0-7	Drahanský Martin, Ing., Dipl.-Ing., Ph.D.
DJA	Dynamic Languages	L	5	26-0-0-6-20	Janoušek Vladimír, Ing., Ph.D.
FAV	Formal Analysis and Verification	Z	5	26-0-0-0-26	Vojnar Tomáš, Doc. Ing., Ph.D.
FAD	Formal Analysis of Programs	Z	0	26-0-0-0-0	Vojnar Tomáš, Doc. Ing., Ph.D.
GIS	Geographical Information Systems	L	4	26-0-0-4-9	Hrubý Martin, Ing., Ph.D.
SEN	Intelligent Sensors	Z	5	26-4-4-0-18	Drahanský Martin, Ing., Dipl.-Ing., Ph.D.
SIN	Intelligent Systems	Z	5	26-10-0-2-13	Janoušek Vladimír, Ing., Ph.D.

Abbr.	Course	Sem	Cr.	Hours	Lecturer
IJC	The C Programming Language	L	5	39-0-0-0-13	Peringer Petr, Dr. Ing.
KRY	Cryptography	L	5	39-0-0-0-13	Hanáček Petr, Doc. Dr. Ing.
KIBP	Cryptography and Information Security (for FBM)	Z	5	26-0-0-0-26	Cvrček Daniel, Doc. Ing., Ph.D.
KID	Cryptography and its implementation	Z	0	39-0-0-0-4	Cvrček Daniel, Doc. Ing., Ph.D.
MSD	Modelling and Simulation	Z	0	39-0-0-9-0	Zbořil František V., Doc. Ing., CSc.
IMS	Modelling and Simulation	Z	5	39-4-0-2-7	Peringer Petr, Dr. Ing.
IOS	Operating Systems	L	5	39-0-0-0-13	Vojnar Tomáš, Doc. Ing., Ph.D.
PRL	Parallel and Distributed Algorithms	L	5	39-0-0-0-13	Hanáček Petr, Doc. Dr. Ing.
PES	Petri Nets	L	5	39-0-0-13-0	Češka Milan, Prof. RNDr., CSc.
PAS	Advanced Assembly Languages	Z	5	26-0-0-16-10	Orság Filip, Ing., Ph.D.
IPR	Computer Hardware	L	6	26-13-13-0-0	Kunovský Jiří, Doc. Ing., CSc.
ROB	Robotics	Z	5	26-0-6-0-20	Orság Filip, Ing., Ph.D.
RDID	Dissertation	L	0	0-0-0-0-26	Češka Milan, Prof. RNDr., CSc.
ICP	The C++ Programming Language	L	4	0-26-0-0-13	Peringer Petr, Dr. Ing.
IJA	Java Programming Language	L	4	0-26-0-0-13	Kočí Radek, Ing., Ph.D.
IST	Smalltalk	L	4	0-26-0-0-13	Janoušek Vladimír, Ing., Ph.D.
STI	Theoretical Computer Science – a seminar	Z	3	0-26-0-0-0	Vojnar Tomáš, Doc. Ing., Ph.D.
SNT	Simulation Tools and Techniques	L	5	39-0-0-0-13	Češka Milan, Prof. RNDr., CSc.
SFC	Soft Computing	Z	5	26-0-0-0-26	Zbořil František V., Doc. Ing., CSc.
ISI	Community and Information Technology	L	3	26-0-0-0-0	Křena Bohuslav, Ing., Ph.D.
TIN	Theoretical Computer Science	Z	5	39-0-0-0-13	Češka Milan, Prof. RNDr., CSc.
TIN	Theoretical Computer Science	L	5	39-0-0-0-13	Češka Milan, Prof. RNDr., CSc.
TAD	Theory and Applications of Petri Nets	L	0	39-0-0-8-0	Češka Milan, Prof. RNDr., CSc.
ITO	Circuit Theory	Z	6	26-13-0-13-0	Kunovský Jiří, Doc. Ing., CSc.
ITY	Typography and Publishing	L	4	13-0-0-0-26	Křena Bohuslav, Ing., Ph.D.

Abbr.	Course	Sem	Cr.	Hours	Lecturer
IUS	Introduction to Software Engineering	Z	5	26-0-0-6-7	Křena Bohuslav, Ing., Ph.D.
VND	Highly Sophisticated Computations	L	0	39-0-0-0-0	Kunovský Jiří, Doc. Ing., CSc.
VNV	Highly Sophisticated Computations	L	5	26-0-0-26-0	Kunovský Jiří, Doc. Ing., CSc.
IZU	Fundamentals of Artificial Intelligence	Z	4	26-0-0-13-0	Zbořil František V., Doc. Ing., CSc.
IZU	Fundamentals of Artificial Intelligence	L	4	26-0-0-13-0	Zbořil František V., Doc. Ing., CSc.

Research Projects

Innovation of Intelligent Systems Laboratory, FRVŠ MŠMT, FR1743/2007/A, 2007
Research leader: Zbořil František V.
Team leaders: Drahanský Martin, Hanáček Petr, Orság Filip

Intelligent Agent and Multi-agent Systems, GAČR, GP102/07/P431, 2007-2009
Research leader: Zbořil František

Teaching Support for Intelligent Systems, FRVŠ MŠMT, FR2286/2007/G1, 2007
Research leader: Mazal Zdeněk
Team leaders: Jurka Pavel, Zbořil František V.

Advanced Formal Approaches in the Design and Verification of Computer-Based Systems, GAČR, GA102/07/0322, 2007-2009
Research leader: Češka Milan
Team leaders: Cerhák Michal, Erlebach Pavel, Holík Lukáš, Janoušek Vladimír, Kironský Elöd, Kočí Radek, Křena Bohuslav, Polášek Petr, Rogalewicz Adam, Smrčka Aleš, Vojnar Tomáš

Software Stabilisation of Image Signal from Camera System, EVPU, JC-8500/HS1470031, 2007
Research leader: Drahanský Martin
Team leaders: Orság Filip, Vašíček Zdeněk, Zbořil František

Technical Evaluation of Biometric Systems, NBU, ST20072007006, 2007
Research leader: Drahanský Martin
Team leaders: Orság Filip

Model Based System Development, GAČR, GP102/07/P306, 2007-2009
Research leader: Kočí Radek

Security-Oriented Research in Information Technology, CEZ MŠMT, MSM0021630528, 2007-2013
Research leader: Hruška Tomáš
Team leaders: Burget Lukáš, Burget Radek, Cvrček Daniel, Černocký Jan, Češka Milan, Drahanský Martin, Dvořák Václav, Fučík Otto, Hanáček Petr, Herout Adam, Hrubý Martin, Janoušek Vladimír, Jaroš Jiří, Kočí Radek, Kolář Dušan, Kořenek Jan, Kotásek Zdeněk, Kršek Přemysl, Křena Bohuslav, Kunovský Jiří, Martínek Tomáš, Masopust Tomáš, Matějka Pavel, Matoušek Petr, Meduna Alexander, Očenášek Pavel, Orság Filip, Růžička Richard, Ryšavý Ondřej, Sekanina Lukáš, Smrž Pavel, Strnadel Josef, Švéda Miroslav, Vojnar Tomáš, Zbořil František, Zbořil František V., Zemčík Pavel, Zendulka Jaroslav

Automatic Verification of Programs with Dynamic Data Structures with Pointers, BARRANDE, 2-06-27, 2006-2007
Research leader: Vojnar Tomáš
Team leader: Habermehl Peter

Methods and Tools for Automated Bug Detection in Software, GAČR, GP102/06/P076, 2006-2008
Research leader: Křena Bohuslav

Mobile Autonomous Robot, FRVŠ MŠMT, FR2818/2006/G1, 2006-2007
Research leader: Rozman Jaroslav
Team leader: Zbořil František V.

SHADOWS - A Self-Healing Approach to Designing Complex Software Systems, EC EU, 2006-2009
Research leader: Křena Bohuslav
Team leaders: Kočí Radek, Vojnar Tomáš, Zbořil František

Modelling and Simulation of Intelligent Systems, GAČR, GP102/06/P309, 2006-2008
Research leader: Hrubý Martin

Research, Development and Deployment of Secure Client Authorization of Electronic Transactions, MPO ČR, FI-IM3/223, 2006-2007
Research leader: Hanáček Petr
Team leaders: Cvrček Daniel, Malinka Kamil, Tomec Martin

Integrated Approach to Education of Ph.D. Students in the Area of Parallel and Distributed Systems, GAČR, GD102/05/H050, 2005-2008
Research leader: Gruska Jozef
Team leader: Češka Milan

Reputation-based Security in Information Systems, MŠMT, 1K04106, 2004-2007
Research leader: Hanáček Petr
Team leader: Cvrček Daniel

Optical Network in National Research and its New Applications - Programmable Hardware, CESNET, MSM6383917201, 2004-2010
Research leader: Novotný Jiří
Team leaders: Čejka Rudolf, Fučík Otto, Kořenek Jan, Martínek Tomáš, Matoušek Petr, Pečenka Tomáš, Smrčka Aleš, Vojnar Tomáš, Zemčík Pavel

Co-operation

Co-operation in the Czech Republic

- Artisys, Brno, http://www.artisys.aero/, co-operation in the tools development for automated bug detection and self-healing in parallel programs within the European 'Shadows' project,
- CESNET, Praha, http://www.cesnet.cz, research and application of formal verification methods in the Liberouter project focused on the development of active FPGA-based net elements,
- Digitus, s.r.o., Přerov, www.digitus.cz, biometric systems,
- EGU Brno, a.s., http://www.egubrno.cz/, co-operation, research and development of model soft strategic interactions of producers, dealers, consumers and state-owned organizations in the field of electric power system.
- E-COM, s.r.o., Slavkov u Brna, www.e-com.cz, graphic simulation tools
- E-COM s.r.o., Slavkov u Brna, www.e-com.cz, co-operation in intelligent systems and simulations for military purposes
- EVPÚ Defence, s.r.o., Uherské Hradiště, www.evpudefence.com, development of image stabilization.
- FI MU, Brno, http://www.fi.muni.cz, co-operation in education of doctoral students in the field of parallel and distributed systems within the 102/05/H050 GACR project, and in the research and application of formal verification methods in the Liberouter project
- FI MU, Brno, http://www.fi.muni.cz, co-operation in the field of security.
- Grisoft, a.s., www.grisoft.com, co-operation in the field of security.
- Monet+, Zlín, www.monetplus.cz, co-operation in the field of security.
- Rutronik, s.r.o., Brno, www.rutronik.cz, support in electrical components development
- ZZM, s.r.o., Brno, www.zzm.cz, co-operation, system of store management and security
- UPEI FSI, VUT v Brně, http://www.upei.fme.vutbr.cz/, co-operation, simulation of technological processes and tool development.

International Co-operation

- Fraunhofer Gesellschaft, Institut für Graphische Datenverarbeitung, Darmstadt (SRN), biometric systems
- Gesellschaft für Informatik e.V., image-building of our department in the international context
- ICT, University of Malta, Msida, Malta, http://www.um.edu.mt/ict/, co-operation, research on advanced simulation methods.
- IBM Haifa Research Laboratory, Haifa, Izrael, http://www.haifa.il.ibm.com, Royal Philips Electronics, Eindhoven, The Netherlands, http://www.philips.com/, University of Potsdam, Germany, http://www.uni-potsdam.de/, LTA, DISCo, Universita degli studi di Milano Bicocca, Italy, http://www.lta.disco.unimib.it, Scapa Technologies, Edinburgh, Great Britain, http://www.scapatech.com/, Comverse, Tel Aviv, Izrael, Net Technologies, Athens, Greece, http://www.nettechn.com, co-operation, research in

automated bug detection and self-healing in parallel programs within the European 'Shadows' project: https://sysrun.haifa.il.ibm.com/shadows/

- Institut für Informatik, TU München, Germany, http://www4.in.tum.de, co-operation in the research of methods of formal verification of infinite-state systems based on learning regular languages from patterns
- LAG, ENSIEG, Grenoble, Francie, http://www.lag.ensieg.inpg.fr/fr/index.php, co-operation in the research of hybrid Petri nets.
- LIAFA, Université Paris 7 – Denis Diderot/CNRS, Paříž, Francie, http://www.liafa.jussieu.fr, co-operation in the research of methods of formal verification of infinite-state systems, e.g. programs with infinite dynamic pointer-based data structures
- Security Research, Computer Laboratory, University of Cambridge, www.cl.cam.ac.uk, co-operation in the field of security
- STMicroelectronics, www.st.com, co-operation, hardware and embedded systems
- Texas Instruments, www.ti.com, co-operation, hardware and embedded systems
- Universita degli studi di Milano-Bicocca, http://www.unimib.it/, symbolic executions of Java programmes
- VERIMAG, UJF/INPG/CNRS, Grenoble, Francie, http://www-verimag.imag.fr, co-operation in the research of methods of formal verification of infinite-state systems, e.g. programs with infinite dynamic pointer-based data structures.

Visitors to the Department

- Rachel Tzoref, IBM Haifa Research Lab, Israel, detection and removal of SW errors/faults related to parallelism
- Tiziana Margaria-Steffen,Universitat Potsdam, Germany, an invited lecture, MEMICS 2007, discussion on service and formal verification
- Georg Jung, Universitat Potsdam, Německo, presentation and discussion on jABC (www.jabc.de)
- Dr. P. Habermehl z LIAFA, Université Paris 7 – Denis Diderot/CNRS, 24.6. - 30.6.2007. Joint research with Doc. T. Vojnar from DITS FIT, focused on program verification and work on a shared journal article.
- Dr. P. Habermehl z LIAFA, Université Paris 7 – Denis Diderot/CNRS, 29.10. - 2.11.2007. Continuation of the joint research with Doc. T. Vojnar from DITS FIT, focused on program verification.
- Dr. T. Touili z LIAFA, Université Paris 7 – Denis Diderot/CNRS, 8.12. - 11.12.2007. Initiation of joint research with Doc. T. Vojnar from DITS FIT focused on program verification.

Visits of Staff Members to Other Institutions

- Drahanský Martin, Ing., Ph.D., E-COM, s.r.o., 4 days,
- Drahanský Martin, Ing., Ph.D., EVPÚ Defence, s.r.o., 3 days,
- Drahanský Martin, Ing., Ph.D., National Security Office, 2 days
- Drahanský Martin, Ing., Ph.D., TeleTrusT AG6, Berlín, Germany, 3 days,
- Drahanský Martin, Ing., Ph.D., FH Wiesbaden, Germany, 5 days,
- Drahanský Martin, Ing., Ph.D., Fraunhofer Gesellschaft, Institut für Graphische Datenverarbeitung, Darmstadt, Germany 3 days,
- Hanáček Petr, Doc. Dr. Ing., T-Mobile, Praha, CZ, 1 day,
- Bohuslav Křena, Ing., Ph.D., Universita degli studi di Milano-Bicocca, Itálie, 5 visits, 26 days,

- Bohuslav Křena, Ing., Ph.D., Net Technologies, Greece, meeting related to SHADOWS project, 4 days,
- Bohuslav Křena, Ing., Ph.D., European Commission, Belgium, review meeting to SHADOWS, 4 days,
- Křena Bohuslav, Ing., Ph.D., Galileo Avionica S.p.A., Torino, Italy, 3 days,
- Křena Bohuslav, Ing., Ph.D., IBM Haifa Labs, IBM Research, Haifa University Campus, Haifa, Israel, 6 days,
- Křena Bohuslav, Ing., Ph.D., Europe's Information Society, Helsinki, Finland, 4 days.
- Kunovský Jiří, Doc., Ing., Csc., Applied Dynamics International, Ltd., June 2007, topic: real-time calculations and simulations,
- Novosad Petr, Ing., LAG, ENSIEG, Grenoble, Francie, 5 days, a meeting with Prof. Hassan Alla and his students, work on the design of analysis algorithms of hybrid Petri nets using coverability graphs,
- Tomáš Vojnar, Doc. Ing., Ph.D., three visits to LIAFA, Université Paris 7 – Denis Diderot/CNRS, common research on application of automata theory for symbolic verification of infinite-state systems, especially of programs with dynamic data structures, research on efficient work with non-deterministic tree automata for symbolic verification of infinite-state systems,
- Tomáš Vojnar, Doc. Ing., Ph.D., two visits to VERIMAG, Université Joseph Fourier/INPG/CNRS, Grenoble, common research on application of automata theory for symbolic verification of infinite-state systems, especially of programs with dynamic data structures,
- Tomáš Vojnar, Doc. Ing., Ph.D., invitation to the Department of Information Technology, Uppsala University, research on efficient work with non-deterministic tree automata for symbolic verification of infinite-state systems,
- Smrčka Aleš, Ing., Max Planck Institute for Software Systems, Saarbrucken, Germany, 3days,
- Zbořil František, Ing., Ph.D., EVPU Defence, s.r.o., Uherské Hradiště, CZ, 2 days,
- Zbořil František V., Doc. Ing., CSc., EVPU Defence, s.r.o., Uherské Hradiště, CZ, 1 day.

Agreements

- EVPÚ Defence, s.r.o., Uherské Hradiště, image stabilization - a project,
- National Security Authority, Praha, Technical Evaluation of Biometrical Systems
- Monet+, a.s., Zlín, "Research, development and implementation of safe client authorization of electronic transactions",
- Grisoft a.s., sponsorship in the area of security.

Memberships in International Organizations and Societies

- Češka Milan, Prof., RNDr., Csc.:
    - TC 10 IFIP Committee - Computer Systems Technology,
    - IFIP WG 10.1 Computer Aided System Theory,
    - A member of editorial board of the International Journal of General Systems, Gordon and Breach Science Publisher, USA,
    - A member of Research Board of Advisors, American Biographical Institute,
    - Gesellschaft für Informatik, GE

- Drahanský Martin, Ing., Dipl.-Ing., Ph.D.:
    - Gesellschaft für Informatik, GE
    - BioAPI Consortium,
    - Texas Instruments University Programme.
- Hrubý Martin, Ing., Ph.D.:
    - ESM (European Simulation and Modelling Conference).
- Křena Bohuslav, Ing., Ph.D.:
    - ACM.
- Kunovský Jiří, Doc., Ing., Csc.:
    - Programme committee of EUROSIM 2007 Conference.
- Tomáš Vojnar, Doc., Ing., Ph.D.:
    - Editorial board of the international scientific journal Computer and Informatics published by the Slovak Academy of Science,
    - Programme committees of internationals conferences and workshops (PNSE'07, SOQUA'07, ISIM'07 a MEMICS'07),
    - ACM.
- Zbořil František V., Doc. Ing., CSc.:
    - Programme committees of ASIS (CR), ECI (SK) and MOSIS (CR) conferences

Publications

Presentations, electronic documents:

Drahanský, M.: Methods for Quality Determination of Papillary Lines in Fingerprints, Gaithersburg, US, 2007, pp. 1-25

Drahanský, M.: Přehled biometrických systémů a testování jejich spolehlivosti (An Overview of Biometric Systems and of Testing their Reliability), Praha, CZ, 2007, p. 37

Drahanský, M.: Testen der Qualität von Fingerabdruckbildern, Berlín, DE, 2007, p. 28

Orság, F., Drahanský, M.: Präsentation der Forschungsgruppe Biometrie und BUSLab, Darmstadt, DE, 2007, p. 2

Interview:

Polášková, M., Drahanský, M.: Technické hodnocení biometrických systémů (Technical Evaluation of Biometric Systems), Brno, CZ, 2007, p. 1-1

Professional monograph:

Vojnar, T.: Cut-offs and Automata in Formal Verification of Infinite-State Systems, Brno, CZ, FIT VUT, 2007, p. 189, ISBN 978-80-214-3547-6

Conference Papers:

Cvrček, D., Malinka, K.: Effects of Social Networks On Anonymity Systems, In: Proceedings of ISAT 2007, Wroclaw, PL, 2007, p. 8

Cvrček, D., Malinka, K.: Behaviour of Electronic Mail Users, In: Datakon 2007 - to appear, Brno, CZ, 2007, pp. 1-10

Češka, M., Erlebach, P., Vojnar, T.: Pattern-Based Verification for Trees, In: Computer Aided Systems Theory, Las Palmas, ES, 2007, pp. 181-182, ISBN 978-84-690-3603

Drahanský, M., Orság, F.: Testování kvality snímků otisků prstů (Fingerprint quality testing), In: Datakon 2007, Brno, CZ, MUNI, 2007, pp. 161-168, ISBN 978-80-7355-076-9

Drahanský, M.: Sinusoidal Shape of a Papillary Line Crosscut, In: 2007 ECSIC Symposium on Bio-Inspired Learning, And Intelligent Systems for Security, Los Alamitos, US, IEEE CS, 2007, pp. 19-21, ISBN 0769529194

Dvořák, R., Drahanský, M.: Real-Time Terrain Deformations, In: Proceedings of the Fourth International Conference on Image and Graphics, Los Alamitos, US, IEEE CS, 2007, pp. 1020-1025, ISBN 0-7695-2929-1

Hanáček, P.: Vliv nových IT technologií na management bezpečnosti v organizaci, (The Influence of New IT Technologies on Security Management) In: Security 2007, Praha, CZ, 2007, pp. 18-22

Holík, L., Rogalewicz, A.: Counterexample Analysis in Abstract Regular Tree Model Checking of Complex Dynamic Data Structures, In: Third Doctoral Workshop on Mathematical and Engineering Methods in Computer Science (MEMICS 2007), Znojmo, CZ, 2007, pp. 59-66, ISBN 978-80-7355-077-6

Hrubá, V., Křena, B., Vojnar, T.: Using JavaPathFinder for Self-healing Assurance, In: Proceedings of 3rd Doctoral Workshop on Mathematical and Engineering Methods in Computer Science - MEMICS 2007, Znojmo, CZ, Novotny, 2007, p. 67-73, ISBN 978-80-7355-077-6

Hrubý, M., Bednář, J.: Automated Optimization of Models Based on Game Theory, In: Proceedings of International Symposium on Innovations in Intelligent Systems and Applications, Istanbul, TR, IEEE Turkey, 2007, pp. 134-138, ISBN 978-975-461-424-

Hrubý, M.: Modelling the Structured and Complex Decision Situations, In: Proceedings of the 6th EUROSIM Congress on Modelling and Simulation, Ljubljana, SI, 2007, p. 10, ISBN 978-3-901608-32-2

Janoušek, V., Kironský, E., Polášek, P.: An Architecture for Simulation-Based Evolutionary Design of Systems, In: Proceedings of the 16th International Conference on System Science, Wroclaw, PL, 2007, pp. 396-405, ISBN 978-83-7493-339-1

Janoušek, V., Kočí, R., Zbořil, F.: Towards Modelling Rational Agents with Object Oriented Petri Nets, In: Proceedings of the Workshop on Petri Nets and Software Engineering, Siedlce, PL, 2007, pp. 244-245, ISBN 978-83-7051-427-3

Janoušek, V., Kočí, R.: Embedding Object-Oriented Petri Nets into a DEVS-based Simulation Framework, In: Proceedings of the 16th International Conference on System Science, Wroclaw, PL, 2007, pp. 386-395, ISBN 978-83-7493-339-1

Janoušek, V., Kočí, R.: Simulation and Design of Systems with Object Oriented Petri Nets, In: Proceedings of the 6th EUROSIM Congress on Modelling and Simulation, Ljubljana, SI, 2007, p. 9, ISBN 978-3-901608-32-2

Kněžík, J., Drahanský, M.: Simple EEG Driven Mouse Cursor Movement, In: Computer Recognition Systems 2, Wroclaw, PL, Springer, 2007, p. 1-5, ISBN 978-3-540-75174-8

Kočí, R., Mazal, Z., Zbořil, F., Janoušek, V.: Modelling Deliberative Agents Using Object Oriented Petri Nets, In: Proceedings of the 7th ISDA, Los Alamitos, US, IEEE CS, 2007, pp. 15-20, ISBN 0-7695-2976-3

Kraus, M., Kunovský, J., Šátek, V.: Fourier Analysis and Modern Taylor Series Method, In: Proceedings of the 7th International Conference on Applied Mathematics, Bratislava, SK, 2007, p. 6, ISBN 978-80-969562-5-8

Kraus, M., Kunovský, J.: Adapting Power-Series Integration to Real-Time Simulation, In: Proceedings of the 6th EUROSIM Congress on Modelling and Simulation, Vienna, AT, 2007, p. 6, ISBN 978-3-901608-32-2

Křena, B., Letko, Z., Tzoref, R., Ur, P., Vojnar, T.: Healing Data Races On-The-Fly, In: Proceedings of 5th International Workshop on Parallel and Distributed Systems: Testing and Debugging Modelling - PADTAD'07, London, GB, ACM, 2007, p. 54-64, ISBN 978-1-59593-734-6

Kunovský, J., Pindryč, M., Šátek, V., Zbořil, F., V.: Stiff Systems in Theory and Practice, In: Proceedings of the 6th EUROSIM Congress on Modelling and Simulation, Vienna, AT, 2007, p. 6, ISBN 978-3-901608-32-2

Lodrová, D.: Rozpoznávání živosti otisků prstů (Liveness Testing by Fingers), In: Proceedings of the 13th Conference STUDENT EEICT 2007, Brno, CZ, VUT Brno, 2007, pp. 260-262, ISBN 978-80-214-3408-0

Martinek, D.: Utilization of Systematic Approach to Uncertainty, In: Proceedings of XXIXth International Autumn Colloquium ASIS 2007 Advanced Simulation of Systems, Ostrava, CZ, MARQ, 2007, pp. 161-166, ISBN 978-80-86840-34-5

Mazal, Z., Jurka, P., Zbořil, F., V.: Framework for Intelligent Systems Education Support at FIT BUT, In: ASIS 2007, Ostrava, CZ, MARQ, 2007, pp. 173-176, ISBN 978-80-86840-34-5

Novosad, P., Češka, M.: Simulation and Analysis of Condition/Event Petri Nets Using Software Tool CESim, In: Proceedings of 21th European Simulation and Modelling Conference ESM'2007, St. Julians, Malta, MT, EUROSIS, 2007, pp. 170-172, ISBN 978-90-77381-36-6

Peringer, P.: Porting SIMLIB/C++ to 64-bit Platform, In: Proceedings of XXIXth International Autumn Colloquium ASIS 2007, Ostrava, CZ, MARQ, 2007, pp. 155-160, ISBN 978-80-86840-34-5

Rozman, J.: Mobile Autonomous Robot, In: Proceedings of the 13th Conference and Competition STUDENT EEICT 2007 Volume 4, Brno, CZ, FIT VUT, 2007, pp. 478-482, ISBN 80-214-3410-3

Samek, J.: A Trust-Based Model for Multi-agent Systems, In: Proc. EUROSIM 2007, Vienna, AT, 2007, p. 6, ISBN 978-3-901608-32-2

Sekanina, L., Hruška, T., Vojnar, T., Kolář, D., Černocký, J.: On Some Directions in Security-Oriented Research, In: 2007 ECSIC Symposium on Bio-Inspired Learning, And Intelligent Systems for Security, Los Alamitos, US, IEEE CS, 2007, pp. 141-144, ISBN 0769529194

Skřivánek, R.: Control Structures in the Beta Language, In: MOSIS 2007, Ostrava, CZ, MARQ, 2007, pp. 93-96, ISBN 978-80-86840-30-7

Smrčka, A., Řehák, V., Vojnar, T., Šafránek, D., Matoušek, P., Řehák, Z.: Verifying VHDL Design with Multiple Clocks in SMV, In: Formal Methods: Applications and Technology, Bonn, DE, Springer, 2007, pp. 148-164, ISSN 0302-9743

Zbořil, F., Kočí, R.: Intention Structures Modelling Using Object Oriented Petri Nets, In: Proceedings of the 7th ISDA, Los Alamitos, US, IEEE CS, 2007, pp. 33-38, ISBN 0-7695-2976-3

Zbořil, F.: Framework for Model-Based Design of Multi-agent Systems, In: Proc. EUROSIM 2007, Vienna, AT, 2007, p. 11, ISBN 978-3-901608-32-2

Journal Articles:

Bartoň, R., Hrubý, M.: GAL Framework, In: Proceedings of the Workshop Geoinformatics FCE CTU, vol. 2007, No. 2, CZ, pp. 33-41, ISSN 1802-2669

Blahák, P., Cvrček, D.: Alternativní zabezpečení WiFi sítí (Alternative Security for WiFi Networks), In: IT System, vol. 2007, No. 2, Brno, CZ, pp. 1-6, ISSN 1212-4567

Češka, M., Erlebach, P., Vojnar, T.: Generalised Multi-Pattern-Based Verification of Programs with Linear Linked Structures, In: Formal Aspects of Computing, vol. 2007, No. 19, London, GB, pp. 363-374, ISSN 0934-5043

Češka, M., Erlebach, P., Vojnar, T.: Pattern-based Verification for Trees, In: Lecture Notes in Computer Science, vol. 2007, No. 4739, DE, pp. 488-496, ISSN 0302-9743

Drahanský, M., Nezhyba, O.: Testy obrazové kvality snímačů otisků prstů Suprema, (Tests of Image Quality of Suprema Fingerprints Scanners) In: Crypto-world, vol. 9, No. 11, 2007, Praha, CZ, pp. 6-11, ISSN 1801-2140

Drahanský, M.: Identita v nás ukrytá (detailní rozbor biometrických systémů), (Identity Hidden in Us – detailed analysis of biometric systems) In: CONNECT!, vol. 2007, No. 4, Brno, CZ, pp. 24-25, ISSN 1211-3085

Habermehl, P., Radu, I., Rogalewicz, A., Vojnar, T.: Proving Termination of Tree Manipulating Programs, In: Lecture Notes in Computer Science, vol. 2007, No. 4762, DE, pp. 145-161, ISSN 0302-9743

Orság, F., Drahanský, M.: Institut für Intelligente Systeme, In: Informatik Spektrum, vol. 30, No. 2, 2007, Heidelberg, DE, p. 1, ISSN 0170-6012

Research:

Drahanský, M., Orság, F., Malinka, K.: Testování snímačů firmy Suprema (Testing of Suprema Scanners), Brno, CZ, Digitus, 2007, pp. 1-17

Hrubá, V., Křena, B., Letko, Z., Vojnar, T.: SHADOWS - Deliverable D3.2.3: Report on Safety of Program Modifications, Brno, CZ, EC EU, 2007, p. 21

Křena, B., Letko, Z., Tzoref, R., Ur, P., Vojnar, T.: SHADOWS - Deliverable D3.2.1: Research Report on Methodology for Self-Healing Concurrent Code Fixing, Brno, CZ, EC EU, 2007, p. 13

Technical report:

Drahanský, M., Vašíček, Z.: Image Stabilization in a Video-stream, IDET 2007, Brno, CZ, EVPU, 2007, p. 1

Dissertation:

Rogalewicz, A.: Verification of Programs with Complex Data Structures, Brno, CZ, 2007, p. 122

Patents
[Method and mechanism for acquirement of biometrical features](), reg.: 2005, admission:2007, expiration:2036
Authors: Drahanský Martin, Funk Wolfgang, Nötzel Ralf
Owner: Fraunhofer Gesellschaft zur Förderung der angewandten Forschung e.V.

Products
Algorithmic and Mathematical Principles of Automatic Number Plate Recognition Systems, software, 2007
Authors: Martinský Ondrej, Zbořil František V., Drahanský Martin

ARTMC - Abstract Regular Tree Model Checking, software, 2007
Authors: Rogalewicz Adam, Vojnar Tomáš

CESim, software, 2007
Authors**:** Novosad Petr

ISTA - Image Stabilization, prototype, 2007
Authors: Drahanský Martin, Orság Filip, Hegar Antonín, Vašíček Zdeněk, Zbořil František

Java Race Detector & Healer, software, 2007
Authors: Letko Zdeněk, Vojnar Tomáš, Křena Bohuslav

Translator of VHDL Design to Counter Automaton, software, 2007
Authors**:** Smrčka Aleš

Simulation Library SIMLIB, version 3, software, 2007
Authors: Peringer Petr, Martinek David

SmallDEVS-07, software, 2007
Authors: Janoušek Vladimír, Kironský Elöd

Fingerprint Quality Testing, applied methodology, 2007
Authors: Drahanský Martin

TKSL, software, 2007
Authors: Kunovský Jiří

Seminars

4.1.2007	David Martinek: Fuzzy systems
9.2.2007	Radek Kočí [SHADOWS workshop]: Java concurrency
5.4.2007	Petr Novosad: Modelling TCP/IP using HPN
17.5.2007	Kraus Michal – Concurrent computing architectures based on numerical integration Pecho Peter – The security of chip cards and the detection of operations using genetic programming Šátek Václav - Stiff systems
24.5.2007	Schäfer Jiří – Distributed trusted systems Samek Jan - Distributed trusted systems: principles of trust and reputations in the multi-agent systems Holík Lukáš – Abstract regular model checking Malinka Kamil – Secure properties of the biometric authentication in information systems
31.5.2007	Jurka Pavel – XML datamining using rough sets Novosad Petr – Automated means of the discrete systems design using Petri Nets Grulich Lukáš – Modelling of socio-economic systems
7.6.2007	Kironský Elöd – Interactive tools for the model based design of intelligent systems Mazal Zdeněk – Modelling of rational agents using OOPN formalism Polášek Petr – Modelling and simulation of heterogeneous systems Rozman Jaroslav – Methods of the mobile robot localization

14.6.2007	Pindryč Milan – Modern methods of modelling and simulation of electric circDITS – stiff systems
6.9.2007	Jakub Bednář: Modelling and prototyping of distributed systems
4.10.2007	Martinek David: Fuzzy systems
18.10.2007	Pecho Peter: Secure hardware Samek Jan: Trast and reputations in the multi-agent systems Schäfer Jiří: Distributed trusted systems Malinka Kamil: Methods of the security specification Skřivánek Roman: The case study checking on quality of exact numerical integration
1.11.2007	Lukáš Holík: Formal verification of infinitive-state systems using the automaton theory Smrčka Aleš: Methods of formal verification of hardware Kironský Elod: Interactive development and simulation of intelligent systems
8.11.2007	Novosad Petr: System modelling by Hybrid Petri Nets
6.12.2007	Polášek Petr: The means for the models and simulation manipulation in distributed environment Rozman Jaroslav: SLAM – Simultaneous localization and mapping
13.12.2007	Mazal Zdeněk: (1) PNagent: The framework for modelling of BDI agents using OOPN, (2) The FRVS project Jurka Pavel: Datamining using rough sets Martinek David: Methods for the fuzzy determination

Other activities

Conferences
- Organization of MEMICS 2007 Conference (Doctoral Workshop on Mathematical and Engineering Methods in Computer Science) meant for presentation of doctoral students research

Invited lectures in seminars
- T. Vojnar: Proving Termination of Tree Manipulating Programs. Seminar DIT, Uppsala University, Sweden.
- T. Vojnar: Counter Automata in Verification of Programs on Lists or Trees. Colloquium FI MU, Brno.
- T. Vojnar: Tree Automata with Limitation in Symbolic Verification of Tree Manipulating Programs. STTI'07 – Current trends in theoretical informatics, ITI MFF UK, Praha.

Invited experts lecturing for our students
- Robert C.W. Owen, Programme Manager for University Programme, Texas Instruments
- R. Hornych, Dpt. of HW Development, STMicroelectronics
- Ondřej Nezhyba, Digitus s.r.o.
- Dana Brhelová, Artisys Brno (SHADOWS), two lectures in IUS
- Michal Pechan, Unicorn, two lectures in IUS
- Tomáš Tureček, TietoEnator Czech s.r.o., a lecture in IJA

Summary of two academic periods

The Department of Intelligent Systems came to existence at the same time as the FIT BUT: in January 2002. Since then the staff have participated in pedagogical as well as research activities of the faculty. The department provides 14 subjects of the Information Technology Bachelor study programme and since 2004 also a number of subjects in the Master study programme of the faculty. The department supported the origin of the Intelligent Systems specialization in the Master study programme, which was followed by introduction of seven obligatory and nine optional subjects.

In the last six years, the department focused on research in security, system modelling and verification, robotics and smart artificial agents. To support tuition and research in the above fields, several laboratories were built. In January 2005, the BUSlab was established in co-operation with the Faculty of Informatics, Masaryk University, Brno., where teams involved in computer system security can co-operate. The robotic laboratory consists of ten Trilobot robots, two humanoid robots and since late 2007 a Mitsubishi robotic arm. The department also comprises a biometric laboratory, which serves both the tuition and research in authentication methods using fingerprints, hand geometry and other methods using biometric information.

The department takes part in a number of scientific research projects, e.g. a significant international SHADOWS project, under the leadership of IMB Research Laboratory in Haifa, in which our team dedicated to formal verification for automatic detection of programme errors participates. Apart from research projects financed from public sources, there is intensive co-operation with the private sector: namely prototype development for SW image stabilization for camera monitoring systems. Further research is related to modelling, high-performance computing, and consequently, to smallDEVS, PNTalk T-Mass and TKSL simulation systems development.

The following significant results of the department activities can be named: one accepted international patent, several dozens of texts in professional journals, and presentations of research results in a number of significant international conferences every year.

III.3. Department of Computer Graphics and Multimedia

The **Department of Computer Graphics and Multimedia** is responsible for teaching courses in the MSc specialisation called [Computer Graphics and Multimedia](#) that covers computer graphics and multimedia, speech processing, human-machine interfaces, image and sound processing and compression, application interfaces for computer graphics and multimedia, and basics of applied computer graphics disciplines, such as computer-aided design (CAD), geographic information systems, etc. The Department of Computer Graphics and Multimedia is also responsible for teaching **Signals and Systems**, **Computer Graphics Basics** and **Human-Machine Interface Design** courses in [Information Technology](#) Bc programme.

Research activities of the department are mainly focused on general computer graphics algorithms, rendering, processing and recognition of speech signals, animation in three-dimensional space, modern methods of man-machine interaction, image and signal processing, and applications. The main research topics from the above activities are:

- Computer graphics algorithms accelerated using DSP and FPGA,
- perceptually-based robust feature extraction for speech and speaker recognition,
- speech, speaker and language recognition,
- realistic rendering of complex scenes and volume rendering,
- animation of articulated structures, kinematics and dynamics,
- medical data processing and visualization and human body modelling reconstruction from VH data sets,
- parallel rendering implementation of signal processing and graphics algorithms.

The majority of courses consists of lectures supplemented with projects and laboratory lessons. The knowledge that students gain during the lectures is further developed in laboratory lessons and then practised in individually assigned projects and/or team projects.

Most of the laboratory lesson assignments and projects are platform-independent. Tasks that require special equipment can be solved with the use of available Silicon Graphics stations, high-performance computer systems, and specialized peripheries.

Staff
Head of Department
  Černocký Jan, Doc. Dr. Ing.
Deputy Head of Department
  Herout Adam, Ing., Ph.D.
Associate professor
  Černocký Jan, Doc. Dr. Ing.
  Smrž Pavel, Doc. RNDr., Ph.D.
  Zemčík Pavel, Doc. Dr. Ing.
Research worker
  Matějka Pavel, Ing.
  Schwarz Petr, Ing.
  Grézl František, Ing., Ph.D.

Assistant professor

Burget Lukáš, Ing., Ph.D.
Herout Adam, Ing., Ph.D.
Chudý Peter, Ing., Ph.D.
Kršek Přemysl, Ing., Ph.D.
Motlíček Petr, Ing., Ph.D.
Sumec Stanislav, Ing., Ph.D.

Assistant lecturer

Beran Vítězslav, Ing.
Španěl Michal, Ing.

Assistant

Potúček Igor, Ing., Ph.D.

Programmer

Cipr Tomáš, Ing.

Technical staff

Chalupníček Kamil, Ing.
Karafiát Martin, Ing.

Ph.D. student

Fapšo Michal, Ing.
Glembek Ondřej, Ing.
Hradiš Michal, Ing.
Chudý Robert, MgA.
Jošth Radovan, Ing.
Juránek Roman, Ing.
Kadlec Jaroslav, Ing.
Kockmann Marcel, Dipl.-Ing.
Kopecký Jiří, Ing.
Kubíček Radek, Ing.
Malý Květoslav, Ing.
Mikolov Tomáš, Ing.
Pečiva Jan, Ing.
Plchot Oldřich, Ing.
Přibyl Jaroslav, Ing.
Řezníček Ivo, Ing.
Seeman Michal, Ing.
Sivák Martin, Ing.
Szöke Igor, Ing.
Šiler Ondřej, Ing.
Šilhavá Jana, Ing.
Štancl Vít, Ing.
Švub Miroslav, Ing.
Venera Jiří, Ing.
Zuzaňák Jiří, Ing.

Equipment

- 3D Minolta VIVID 800 scanner for automatic scanning of objects up to the size of 1x1x1m with a computer-controlled revolving table for manipulation with the scanned objects. The scanner is connected to the Silicon Graphics Octane workstation.
- Software called SPEL - several tens of large speech corpora from Linguistic Data Consortium, University of Pennsylvania, USA.

- CAMEA DX6 with DSP TI C6711 and FPGA Virtex E-300 for acceleration of graphical computing.
- CAMEA UNI1-P-BUT(2x) with DSP TI C6416 (2x4) and FPGA Virtex II-500 for acceleration of raster image processing.
- Equipment for meeting recording with a camcorder, hyperbolic mirror (for 360 angle), four microphones, and a notebook.
- Rapid prototyping equipment (3D printer) Z310 by Z-corporation for making 3D models of human tissues based on medical diagnostic image systems (CT/MR)
- Stereo data video projector and two large-scale LCDs for demonstrations.

Tuition

Abbr.	Course	Sem	Cr.	Hours	Lecturer
GZN	Graphical and Sound Interfaces and Standards	Z	5	26-0-0-12-14	Herout Adam, Ing., Ph.D.
GJA	Graphical User Interfaces in Java	Z	5	26-0-0-0-26	Smrž Pavel, Doc. RNDr., Ph.D.
GJA	Graphical User Interfaces in Java	L	5	26-0-0-0-26	Smrž Pavel, Doc. RNDr., Ph.D.
KRG	Creative Art	Z	4	13-0-0-0-26	Zemčík Pavel, Doc. Dr. Ing.
MMD	Advanced Methods of 3D Scene Visualisation	Z	0	39-0-0-0-0	Zemčík Pavel, Doc. Dr. Ing.
MZD	Modern Methods of Speech Processing	Z	0	39-0-0-0-0	Černocký Jan, Doc. Dr. Ing.
MUL	Multimedia	L	5	26-0-0-13-13	Sumec Stanislav, Ing., Ph.D.
MULU	Multimedia: subject completed	L	0	0-0-0-0-0	Sumec Stanislav, Ing., Ph.D.
PGD	Computer Graphics	Z	0	39-0-0-0-0	Zemčík Pavel, Doc. Dr. Ing.
PGR	Computer Graphics	Z	5	39-0-0-6-7	Herout Adam, Ing., Ph.D.
POV	Computer Vision	Z	5	26-0-0-0-26	Zemčík Pavel, Doc. Dr. Ing.
PGP	Advanced Computer Graphics	Z	5	26-0-0-0-26	Zemčík Pavel, Doc. Dr. Ing.
IJE	Java Programming Language	Z	5	26-0-0-12-14	Sumec Stanislav, Ing., Ph.D.
IJE	Java Programming Language	L	5	26-0-0-12-14	Sumec Stanislav, Ing., Ph.D.
ISS	Signals and Systems	Z	6	39-0-0-12-14	Černocký Jan, Doc. Dr. Ing.
ISJ	Scripting Languages	L	5	26-0-0-0-26	Smrž Pavel, Doc. RNDr., Ph.D.
SRE	Speech Processing Systems	Z	5	39-0-0-0-13	Černocký Jan, Doc. Dr. Ing.

Abbr.	Course	Sem	Cr.	Hours	Lecturer
ITU	User Interface Programming	Z	4	13-0-0-13-13	Zemčík Pavel, Doc. Dr. Ing.
VIZ	Visualization and CAD	L	5	26-0-0-13-13	Kršek Přemysl, Ing., Ph.D.
VIN	Computer Art	L	5	26-0-0-0-26	Zemčík Pavel, Doc. Dr. Ing.
IZG	Computer Graphics Principles	L	6	39-0-0-13-13	Kršek Přemysl, Ing., Ph.D.
ZAGP	Computer Graphics Principles (for FBM)	Z	4	26-0-0-12-14	Chudý Peter, Ing., Ph.D.
ZPO	Image Processing	L	5	26-0-0-0-26	Zemčík Pavel, Doc. Dr. Ing.
ZPOU	Image Processing: subject completed	L	0	0-0-0-0-0	Zemčík Pavel, Doc. Dr. Ing.
ZPD	Natural Language Processing	Z	0	39-0-0-0-0	Smrž Pavel, Doc. RNDr., Ph.D.
ZPJ	Natural Language Processing	Z	5	26-0-0-0-26	Smrž Pavel, Doc. RNDr., Ph.D.
ASD	Audio and Speech Processing by Humans and Machines	Z	0	39-0-0-0-0	Heřmanský Hynek, Prof. Ing., Dr. Eng.
ZRE	Speech Signal Processing	L	5	26-2-0-12-12	Černocký Jan, Doc. Dr. Ing.
ZREU	Speech Signal Processing: subject completed	L	0	0-0-0-0-0	Černocký Jan, Doc. Dr. Ing.

Research Projects

Laboratory of applied very powerful computational systems (LAVPS), FRVŠ MŠMT, FR2360/2007/Ab, 2007
Research leader: Zemčík Pavel
Team leaders: Černocký Jan, Dvořák Václav, Kršek Přemysl

Search and network access to large archives of audiovisual data, CESNET, 201/2006, 2007,
Research leader: Burget Lukáš
Team leaders: Karafiát Martin, Kašpárek Tomáš, Szöke Igor

Overcoming the language barrier complicating investigation into financing terrorism and serious financial crimes, MV, VD20072010B16, 2007-2010, running
Research leader: Černocký Jan
Team leaders: Glembek Ondřej, Chalupníček Kamil, Karafiát Martin, Mikolov Tomáš

Security-Oriented Research in Information Technology, CEZ MŠMT, MSM0021630528, 2007-2013
Research leader: Hruška Tomáš
Team leaders: Burget Lukáš, Burget Radek, Cvrček Daniel, Černocký Jan, Češka Milan, Drahanský Martin, Dvořák Václav, Fučík Otto, Hanáček Petr, Herout Adam, Hrubý Martin, Janoušek Vladimír, Jaroš Jiří, Kočí Radek, Kolář Dušan, Kořenek Jan, Kotásek Zdeněk, Kršek Přemysl, Křena Bohuslav, Kunovský Jiří, Martínek Tomáš, Masopust Tomáš, Matějka Pavel, Matoušek Petr, Meduna Alexander, Očenášek Pavel, Orság Filip, Růžička Richard, Ryšavý Ondřej, Sekanina Lukáš, Smrž Pavel, Strnadel Josef, Švéda Miroslav, Vojnar Tomáš, Zbořil František, Zbořil František V., Zemčík Pavel, Zendulka Jaroslav

Algorithms of Image Recognition, GAČR, GA201/06/1821, 2006-2008
Research leader: Zemčík Pavel

AMIDA - Augmented Multi-party Interaction with Distance Access, EU-6FP-IST, IST-033812-AMIDA, 2006-2009
Research leader: Zemčík Pavel
Team leader: Černocký Jan

CARETAKER - Content Analysis and REtrieval Technologies to Apply Knowledge Extraction to massive Recording, EU-6FP-IST, 027231, 2006-2008
Research leader: Černocký Jan
Team leaders: Smrž Pavel, Zemčík Pavel

Centre of Computer Graphics, MŠMT, LC06008, 2006-2010, running
Research leader: Zemčík Pavel

Interactive Keyword Detector, GAČR, GP102/06/P383, 2006-2008
Research leader: Burget Lukáš

Advancing the Automatic Language Recognition Using Streamed Audio Media, CESNET, 162/2005, 2006-2007
Research leader: Černocký Jan
Team leaders: Kašpárek Tomáš, Matějka Pavel, Schwarz Petr

Network Application Server for Medical Image Data, CESNET, 200/2006, 2006-2008
Research leader: Kršek Přemysl
Team leaders: Pečiva Jan, Španěl Michal

Curricula Development, EACEA, 2006-2009
Research leader: Honzík Jan M.
Team leader: Drábek Vladimír

Determination of Markers, Screening and Early Diagnostics of Cancer Diseases Using Highly Automated Processing of Multidimensional Biomedical Images, MŠMT, 2B06052, 2006-2011
Research leader: Smrž Pavel
Team leader: Zemčík Pavel

Research and Development of Corpus and Speech Technologies in New Generation of Electronic Dictionaries, MPO ČR, FT-TA3/006, 2006-2009
Research leader: Černocký Jan

Integral Module of Tertiary Education for People with Sensory Perception Impairment, MŠMT, CZ.04.1.03/3.2.15.1./0146, 2005-2007
Research leader: Smrž Pavel
Team leaders: Sinopalniková Anna

New Trends in Research and Application of Voice Technology, GAČR, GA102/05/0278, 2005-2007
Research leader: Černocký Jan
Team leaders: Burget Lukáš, Grézl František, Chalupníček Kamil, Karafiát Martin, Matějka Pavel, Motlíček Petr, Schwarz Petr, Szöke Igor

Optical Network in National Research and its New Applications - Programmable Hardware, CESNET, MSM6383917201, 2004-2010
Research leader: Novotný Jiří
Team leaders: Čejka Rudolf, Fučík Otto, Kořenek Jan, Martínek Tomáš, Matoušek Petr, Pečenka Tomáš, Smrčka Aleš, Vojnar Tomáš, Zemčík Pavel

Rapid Prototyping Tools for Development of HW-Accelerated Embedded Image- and Video-processing Applications, GA AVČR, 1ET400750408, 2004-2008
Research leader: Zemčík Pavel

ECTS/DS - National Coordinator-Team, EC EUA ECTS, 2004-2007
Research leader: Honzík Jan M.
Team leader: Zemčík Pavel

Co-operation

Co-operation the Czech Republic

- Faculty of Informatics MU Brno, Doc. Karel Pala, Dr. Ivan Kopeček, Doc. Jiří Sochor – co-operation in speech processing and computer graphics and natural language processing, http://www.fi.muni.cz,
- VŠB-TU, Ostrava, Faculty of Electronics and Informatics, Dr. Arnošt Šarman – annual series of lectures given by the staff and Ph.D. students of DCGM, VŠB-TU – focused on computer graphics, http://www.vsb-tu.cz ,
- Department of Computers FELK ČVUT Praha, the group of computer graphics, Prof. Jiří Žára - co-operation in basic research, MSMT Centre of Computer Graphics, http://cs.felk.cvut.cz
- Centre for Machine Perception, FELK ČVUT Praha, Prof. Václav Hlaváč, Doc. Jiří Matas, Dr. Martin Urban – co-operation on image processing related to transport, http://cyber.felk.cvut.cz
- ÚTIA Praha, Dr. Jaroslav Kadlec, Ing. Jan Schier - co-operation in the field of algorithm implementation for image processing in FPGA, http://www.utia.cas.cz

- St. Anne Faculty Hospital, Brno, Clinic of Imaging Methods, Head of the Clinic Doc. MUDr. Petr Krupa and Clinic of Stomatology, Clinic of Plastic and Aesthetical Surgery, and Clinic of Traumatology – co-operation in the field of computer models of tissues, http://www.fnusa.cz
- Clinic of Traumatology, Faculty Hospital Bohunice, Brno, Head: Doc. MUDr. Michal Mašek, CSc – co-operation in the field of computer models of tissues, http://www.fnbrno.cz

International Co-operation

- University of Bristol, Bristol, UK, Department of Computer Science, Dr. Alan Chalmers – co-operation in the area of computer graphics, exchange of Ph.D. students, http://www.cs.bristol.ac.uk
- University of Surrey, Guildford, UK, Centre for Vision, Speech, and Signal Processing, Prof. Josef Kittler, Dr. William Christmas – image processing, exchange of Ph.D. students, www.ee.surrey.ac.uk/CVSSP/
- University of Warwick, Warwick, UK, Manufacturing Group, Prof. Alan Chalmers – joint projects, exchange of students and teachers
- University of Helsinki, Helsinki, Finland, Laboratory of Computational Engineering, Prof. Mikko Sams, Dr. Michael Frydrych – co-operation in the area of man-machine communication, exchange of Ph.D. students, http:// www.lce.hut.fi
- Lappeenranta University of Technology, Lappeenranta, Finland, Prof. Heikki Kälviäinen, Prof. Jan Voráček – image processing, exchange of students, Master study in Finland within the IMPIT (International Master's Programme in Information Technology) programme, http://www.lut.fi
- University of Joensuu, Joensuu, Finland, Department of Computer Science, Prof. Jussi Parkkinen, Dr. Markku Hauta-Kasari – multispectral colour image processing, exchange of students, http://www.joensuu.fi/joyindex.html
- Technische Universität Wien, Institut für Komputergrafik, Thomas Theußl – Annual international students' seminar - CESGC (Central European Seminar on Computer Graphics), http:// www.cg.tuwien.ac.at/
- Technische Universität Graz, Institute for Computer Graphics and Vision, Markus Grabner – exchange of students and the Annual international students' seminar CESCG (Central European Seminar on Computer Graphics), http://www.icg.tu-graz.ac.at
- ESIEE Paris, Paris, Francie, Prof. Genevieve Baudoin – speech processing, very low bit rate speech coding, exchange of Ph.D. students, http://www.cge.asso.fr/ecoles/ECOLE128.phtml
- Department of Computer Graphics and Image Processing, Faculty of Mathematics, Physics and Informatics, Comenius University in Bratislava, Slovak Republic, Dr. Andrej Ferko – Annual international students' seminar - CESCG (Central European Seminar on Computer Graphics), http://www.fmph.uniba.sk/

Visitors to the Department

- Prof. Heikki, Kälviäinen, Lappeenranta University of Technology, Finland 3 days
- Dr. Sachin Kajarekar, SRI, USA, 1 day
- Gokhan Ilk, Ankara University, Turkey, 3 days
- Robert Mill, Sheffield University, United Kingdom, 2 days
- Rafael E. Banchs, UPC Barcelona, Spain, 2 days
- Harald Höge, Josef Bauer, Bernt Andrassy, Stephan Grashey, Yekaterina Timoshenko, SIEMENS R&D, Munich, Germany, 1 day

Visits of Staff Members to Foreign Institutions

- Beran Vítězslav, Ing., Thales Communications, Thales Group, THALES-COM, Gennevilliers, FR, 4 days
- Beran Vítězslav, Ing., University of Bristol, UBRIS, Woodland Road, BS8 1UB Bristol, GB, 11 days
- Beran Vítězslav, Ing., ACM Multimedia 2007, Augsburg, DE, 3 days
- Beran Vítězslav, Ing., 2007 TRECVID Workshop, NIST, Gaithersburg, Maryland, US, 10 days
- Burget Lukáš, Ing., Ph.D., 32nd IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Honolulu, US, 29 days
- Burget Lukáš, Ing., Ph.D., Johns Hopkins University, JHU, 3400 N. Charles Street, MD 21218 Baltimore, US, 2 months
- Burget Lukáš, Ing., Ph.D., National Institute of Standards and Technology, NIST, Orlando, Florida, US, 8 days
- Černocký Jan, Doc. Dr. Ing., Thales Communications, Thales Group, THALES-COM, Gennevilliers, FR, 3 days
- Černocký Jan, Doc. Dr. Ing., Insitut Dalle Molle d'Intelligence Artificielle Perceptive, IDIAP, Rue du Simplon 4, CH-1920 Martigny, CH, 5 days
- Černocký Jan, Doc. Dr. Ing., European Comission EU, EC EU, Brussels, BE, 2 days
- Černocký Jan, Doc. Dr. Ing., University of Edinburgh, UEDIN, Old College, South Bridge, EH8 9YL Edinburgh, GB, 4 days
- Černocký Jan, Doc. Dr. Ing., SAFE 2007: Workshop on Signal Processing Applications for Public Security and Forensics, Washington D.C., US, 7 days
- Černocký Jan, Doc. Dr. Ing., The Information Society Technologies (IST) 6th Framework programme, Helsinki, Finland- SOLID, FI, 3 days
- Černocký Jan, Doc. Dr. Ing., International Conference on Text Speech and Dialogue, Plzeň, CZ, 2 days
- Černocký Jan, Doc. Dr. Ing., TNO TPD, Stieltjesweg 1, 2628 CK Delft, NL, 3 days
- Černocký Jan, Doc. Dr. Ing., Ankara University, Faculty of Engineering, AU, FE EED, Beseler, 06100 Ankara, TR, 3 days
- Černocký Jan, Doc. Dr. Ing., National Institute of Standards and Technology, NIST, Orlando, Florida, US, 5 days
- Fapšo Michal, Ing., Deutsche Forschungszentrum für Künstliche Intelligenz, DFKI, Stuhlsatzenhausweg 3, D-66123 Saarbrücken, DE, 4 days
- Glembek Ondřej, Ing., National Institute of Standards and Technology, NIST, Orlando, Florida, US, 9 days
- Grézl František, Ing., 32nd IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Honolulu, US, 17 days
- Grézl František, Ing., Thales Communications, Thales Group, THALES-COM, Gennevilliers, FR, 4 days
- Herout Adam, Ing., Ph.D., Insitut Dalle Molle d'Intelligence Artificielle Perceptive, IDIAP, Rue du Simplon 4, CH-1920 Martigny, CH, 3 days
- Herout Adam, Ing., Ph.D., Katholieke Hogeschool Kempen, KHK, Kleinhoefstraat 4, 440 Geel, BE, 6 days
- Herout Adam, Ing., Ph.D., University of Joensuu, UJ, 80101 Joensuu, FI, 6 days
- Herout Adam, Ing., Ph.D., 2007 TRECVID Workshop, NIST, Gaithersburg, Maryland, US, 10 days
- Hradiš Michal, Ing., ACM Multimedia 2007, Augsburg, DE, 3 days

- Hradiš Michal, Ing., Penn State Erie, The Behrend College, PSE, 4701 College Drive, PA 16563 Erie, US, 2 months
- Chudý Peter, Ing., Ph.D., Fourth International Scientific - Practical Conference, Saint-Petersburg, Russia, RU, 5 days
- Karafiát Martin, Ing., Insitut Dalle Molle d'Intelligence Artificielle Perceptive, IDIAP, Rue du Simplon 4, CH-1920 Martigny, CH, 5 days
- Karafiát Martin, Ing., 32nd IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Honolulu, US, 12 days
- Karafiát Martin, Ing., Interspeech 2007, Antwerps, Belgium, BE, 10 days
- Karafiát Martin, Ing., University of Edinburgh, UEDIN, Old College, South Bridge, EH8 9YL Edinburgh, GB, 3 days
- Kopecký Jiří, Ing., Insitut Dalle Molle d'Intelligence Artificielle Perceptive, IDIAP, Rue du Simplon 4, CH-1920 Martigny, CH, 5 days
- Kršek Přemysl, Ing., Ph.D., Universidad Rey Juan Carlos, URJC, Calle Tulipan s/n E-28933, Madrid, ES, 5 days
- Kršek Přemysl, Ing., Ph.D., 4th International Conference BioMedical Visualization, Curych, CH, 4 days
- Kršek Přemysl, Ing., Ph.D., Engineering in Medicine and Biology Society, Lyon, FR, 5 days
- Matějka Pavel, Ing., Johns Hopkins University, JHU, 3400 N. Charles Street, MD 21218 Baltimore, US, 2 months
- Matějka Pavel, Ing., National Institute of Standards and Technology, NIST, Orlando, Florida, US, 8 days
- Seeman Michal, Ing., University of Joensuu, UJ, 80101 Joensuu, FI, 6 days
- Seeman Michal, Ing., Digital Technologies 2007, Žilina - Slovak Republic, SK, 2 days
- Seeman Michal, Ing., University of Bristol, UBRIS, Woodland Road, BS8 1UB Bristol, GB, 3 days
- Schwarz Petr, Ing., Insitut Dalle Molle d'Intelligence Artificielle Perceptive, IDIAP, Rue du Simplon 4, CH-1920 Martigny, 5 days
- Schwarz Petr, Ing., 32nd IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Honolulu, US, 23 days
- Schwarz Petr, Ing., Johns Hopkins University, JHU, 3400 N. Charles Street, MD 21218 Baltimore, US, 2 months
- Smrž Pavel, Doc. RNDr., Ph.D., European Comission EU, Luxembourg, LU, 1 day
- Smrž Pavel, Doc. RNDr., Ph.D., Thales Communications, Thales Group, THALES-COM, Gennevilliers, FR, 2 days
- Sumec Stanislav, Ing., Ph.D., TNO TPD, Stieltjesweg 1, 2628 CK Delft, NL, 4 days
- Szöke Igor, Ing., University of Joensuu, UJ, 80101 Joensuu, FI, 6 days
- Šilhavá Jana, Ing., Insitut Dalle Molle d'Intelligence Artificielle Perceptive, IDIAP, Rue du Simplon 4, CH-1920 Martigny, CH, 5 days
- Šilhavá Jana, Ing., IV International School on Biology, Computation and Information, Trieste, IT, 9 days
- Šilhavá Jana, Ing., First International Summer School on Bioinformatics and Computational Biology, Lipari, IT, 8 days
- Šilhavá Jana, Ing., Microarray Data Analysis, Cambridge, GB, 5 days
- Španěl Michal, Ing., Universidad Rey Juan Carlos, URJC, Calle Tulipan s/n E-28933, Madrid, ES, 5 days
- Španěl Michal, Ing., The 12th International Conference on Computer Analysis of Images and Patterns, Vienna, AT, 4 days
- Štancl Vít, Ing., University of Joensuu, UJ, 80101 Joensuu, FI, 6 days

- Švub Miroslav, Ing., The 12th International Conference on Computer Analysis of Images and Patterns, Vienna, AT, 4 days
- Švub Miroslav, Ing., University of Joensuu, UJ, 80101 Joensuu, FI, 6 days
- Zemčík Pavel, Doc. Dr. Ing., Katholieke Hogeschool Brugge-Oostende, KHBO, Oostende, BE, 4 days
- Zemčík Pavel, Doc. Dr. Ing., Insititut Dalle Molle d'Intelligence Artificielle Perceptive, IDIAP, Rue du Simplon 4, CH-1920 Martigny, CH, 3 days
- Zemčík Pavel, Doc. Dr. Ing., University of Edinburgh, UEDIN, Old College, South Bridge, EH8 9YL Edinburgh, GB, 4 days
- Zemčík Pavel, Doc. Dr. Ing., Spring Conference on Computer Graphics, Budmerice, Slovakia, SK, 2 days
- Zemčík Pavel, Doc. Dr. Ing., Universidade de Trás-os-Montes e Alto Douro, UTAD, Apartado 1014, 5000-911 Vila Real, PT, 8 days
- Zemčík Pavel, Doc. Dr. Ing., EUROGRAPHICS 2007, Praha, CZ, 3 days
- Zemčík Pavel, Doc. Dr. Ing., The International Conference on Field Programmable Logic and Applications, Amsterdam, NL, 3 days
- Zemčík Pavel, Doc. Dr. Ing., Technological Educational Institute of Crete, Heracleion, Greece, Rhodos Greece, GR, 4 days
- Zemčík Pavel, Doc. Dr. Ing., University of Bristol, UBRIS, Woodland Road, BS8 1UB Bristol, GB, 3 days

Agreements

- Katholieke Hogeschool Brugge Oostende, Faculty of Industrial Sciences, http://www.khbo.be/ Belgium
- Katholieke Hogeschool Kempen, http://www.khk.be/khk04/, Belgium
- University of Southern Denmark, www.ouc.dk, Denmark
- Helsinki University of Technology, http://www.hut.fi/English/, Finland
- Lappeenrannan University of Technology, http://www.lut.fi/english/html, Finland
- University of Joensuu, http://www.joensuu.fi/englishindex.html, Finland
- Oulu Polytechnic Institute of Technology, http://www.oamk.fi, Finland
- École Supérieure d`Ingénieurs en Électrotechnique, http://www.esiee.fr/, France
- ESIEE Amiens, http://www.esiee-amiens.fr/, France
- Universite la Rochelle, http://www.univ-lr.fr/, France
- Utrecht University,http://www.uu.nl/uupublish/homeuu/homeenglish/1757main.html, The Netherlands
- Universidade de Trás-os-Montes e Alto Douro, http://www.utad.pt, Portugal
- Technological Educational Institute of Crete, http://www.teiher.gr/, Greece
- University of Crete, http://www.cc.uch.gr/, Greece
- Slovak University of Technology in Bratislava, http://www.stuba.sk/eng1/about/index.html, Slovak Republic
- Comenius University in Bratislava, http://www.uniba.sk, Slovak Republic
- Yildiz Technical University, Department of Mathematical Engineering, http://www.yildiz.edu.tr/english/index2.php, Turkey
- Graz University of Technology, http://www.tugraz.at/, Austria
- University of Surrey, http://www.surrey.ac.uk, UK
- University of Bristol, http://www.brip.ac.uk/, UK

Memberships in International Organizations and Societies

- Burget Lukáš, Ing., Ph.D.
  - IEEE
- Černocký Jan, Doc. Dr. Ing.,
  - IEEE (IT manager of the Czech-Slovak section)
  - ISCA (International speech communication association).
- Herout Adam, Ing., Ph.D.,
  - ACM
- Matějka Pavel, Ing.
  - IEEE
- Motlíček Petr, Ing., Ph.D.,
  - IEEE
- Potúček Igor, Ing., Ph.D.,
  - [FGnet](#) - IST-2000-26434 (Face and Gesture Recognition Working group)
- Schwarz Petr, Ing.
  - IEEE
  - ISCA
- Smrž Pavel, Doc. RNDr., Ph.D.,
  - AAAI - American Association for Artificial Intelligence
  - IEEE - Institute of Electrical and Electronics Engineers
  - ACL - Association for Computational Linguistics
  - EURALEX - European Association for Lexicography
- Zemčík Pavel, Doc. Dr. Ing.,
  - IEEE
  - ACM

Publications

Software:

Pečiva, J.: CVE Library, Brno, CZ, 2007

Presentations, electronic documents:

Grézl, F., Karafiát, M., Černocký, J.: Neural Network Topologies and Bottle Neck Features in Speech Recognition, Brno, CZ, 2007, p. 5

Hubeika, V., Burget, L., Matějka, P., Černocký, J.: Channel Compensation for Speaker Recognition, Brno, CZ, 2007, p. 1-1

Mikolov, T., Oparin, I., Glembek, O., Burget, L., Karafiát, M., Černocký, J.: Použití mluvených korpusů ve vývoji systému pro rozpoznávání českých přednášek (Use of spoken corpora in the development of system for recognition of Czech lectures), Praha, CZ, 2007, pp. 1-5

Szöke, I., Burget, L., Karafiát, M.: Combination of Word and Phoneme Approach for Spoken Term Detection, Brno, CZ, 2007, p. 1-1

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Grézl, F., Karafiát, M., Kontár, P., Černocký, J.: Probabilistic and Bottle-neck Features for LVCSR of Meetings, In: Proc. IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2007), Honolulu, US, IEEESP, 2007, pp. 757-760

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Hrdlička, P.: Rozpoznávání izolovaných slov (Recognition of Isolated Words), In: Proc. 13th Conference STUDENT EEICT 2007, Brno, CZ, FEKT VUT, 2007, pp. 1-3, ISBN 9788021434103

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Hubeika, V., Szöke, I., Burget, L., Černocký, J.: Maximum Likelihood and Maximum Mutual Information Training in Gender and Age Recognition System, In: Lecture Notes in Computer Science, vol. 2007, No. 9, DE, pp. 1-6, ISBN 978-3-540-74627-0, ISSN 0302-9743

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Dissertation:

Grézl, F.: Trap-Based Probabilistic Features for Automatic Speech Recognition, Brno, CZ, 2007, p. 128

Products

AdaBoost Runtime, authorized software, 2007
Author: Juránek Roman

Volume Data Analysis, authorized software, 2007
Author: Seeman Michal

CVE Library, authorized software, 2007
Author: Pečiva Jan

Virtual Reality Engine for Image Processing Demonstrations, authorized software, 2007
Author: Potúček Igor

HW Adaboost Engine, authorized software, 2007
Author: Granát Jiří

Medical Data Segmentation Toolkit, authorized software, 2007
Authors: Španěl Michal, Kršek Přemysl, Švub Miroslav

OpenCVDigILibBridge, authorized software, 2007
Author: Venera Jiří

Separable Resampling, authorized software, 2007
Authors: Přibyl Bronislav, Seeman Michal, Zemčík Pavel

Script for Image Processing, authorized software, 2007
Author: Zuzaňák Jiří

Software for Evaluation of Image Classifiers, authorized software, 2007
Authors: Beran Vítězslav, Herout Adam, Hradiš Michal, Chmelař Petr, Juránek Roman,
Šilhavá Jana, Zemčík Pavel

TETA: Trecking Evaluation Tool, authorized software, 2007
Author: Beran Vítězslav

Seminars

9.2.2007	Estimation of Gaussian Mixture Model Parameters Using Expectation-Maximization – Z. Vašíček Content Analysis of Distributed Video Surveillance Data for Retrieval and Knowledge Discovery – P. Chmelař
16.2.2007	Free(b)soft Laboratory – M. Zamazal
21.3.2007	Fundus Image Analysis of Diabetic Retinopathy – H. Kälviainen
23.3.2007	Killer Search in Absolutely Nonsenique Meetings – I. Szöke, M. Fapšo
4.5.2007	Image AdaBoost Evaluator - M. Žádník Simple and Efficient Implementation of Large Texture Binding System – J. Přibyl
11.5.2007	Framework for Rapid Development of Hardware Accelerated Image Processing Applications – M. Vyskočil Embedded system with AdaBoost Engine – J. Granát
18.5.2007	Brno in the NIST RT 07 (Rich Transcription 2007 Meeting Recognition Evaluation) Hell – M. Karafiát, L. Burget WebBootCaT: a web tool for instant corpora – J. Pomikálek Project Photosphere – M. Seeman
25.5.2007	Morphological Analysis – Dictionary Look Up Instead of True Analysis – P. Smrž Detection of Plagiarism in Texts - R. Řehůřek Use of Stable Points for Robust Tracking of Camera Movement – I. Potúček, V. Beran
8.6.2007	Implementation of Keyword Spotter to Mobile Phone - T. Cipr Changing the Speed of Speech – A. Kovařík Automatic Acquisition of Digital Satellite Broadcast – I. Řezníček Recognition of Isolated Words for Dictionaries – Hrdlička, Veselý
15.6.2007	Graph Based Medical Data Segmentation – M. Švub Blood Vessel Segmentation in 3D Data – V. Štancl Tetrahedral mesh from density data – O. Šiler

21.6.2007	How it was in IBM Watson research centre - O. Glembek Overview of Arabic speech recognition in the world - J. Kopecký
22.6.2007	AdaBoost Learning at DCGM - M. Hradiš Development of PRASE Browser – J. Merelle, J. Kubalík Network Interface to Keyword Spotter - M. Skotnica
3.9.2007	Speech Recognition as Feature Extraction for Speaker Recognition - P. Kajarekara
10.9.2007	Recovery from Model Inconsistency in Multilingual Speech Recognition - L. Burget, P. Matějka, P. Schwarz
21.9.2007	A Novel Approach to Speech Coding After Time Scale Modification - G. Ilk
26.10.2007	Posterior and bottle-neck features for speech recognition – F. Grézl Graphical user interface for language identification - T. Cipr Features for Camera Tracking Recovery – I. Potúček, V. Beran
31.10.2007	Statistical Models for Automatic Speech Recognition - L. Burget
9.11.2007	What's done in indexing and search - I. Szöke, M. Fapšo Hardware Acceleration of AdaBoost Clasifier - J. Venera
23.11.2007	Brno Graph Group at NIST TRECVID 2007 Evaluation – A. Herout, V. Beran

Summary of two academic periods

The Department of Computer Graphics and Multimedia was founded in early 2002 together with the Faculty of Information Technology. The beginning of its six-year history meant work towards building high quality tuition in the Master study programme, endeavour to reinforce the staff of the department and, at the same time, to keep tempo in research activities. Employees who asked for transfer to the FIT from other faculties of BUT but also people outside BUT came to the department. The department succeeded in providing a high-level tuition in the Bachelor, Master, and Doctoral study programmes.

Students from a number of foreign countries, apart from Czech and Slovak students, studied at the department within the framework of Socrates/Erasmus and Leonardo exchange programmes.

The research activities of the department expanded especially in the field of speech recognition, medical applications of computer graphics, in the field of computer vision and image recognition and in the area of natural language processing.
At present, the following research fields are being developed at the department:

- Computer graphics algorithms accelerated using DSP and FPGA,
- robust speech recognition based on knowledge of human hearing and creation of large speech databases
- application of computer graphics, processing and visualisation of medical data,
- natural language processing.

To support research, the department succeeded in gaining EU financed projects, projects financed from grant agencies and other sources. Very good results were achieved in research, e.g. in speech, language and speaker recognition, the best possible evaluation was achieved according to the US ''National Institute for Standards and Technology''. Some research results became part of practical life, especially in the field of computer graphics applied in medicine.

The equipment of the Department of Computer Graphics and Multimedia is in a very good condition due to the care of the staff and due to sufficient financial support.
The location of the department is favourable and convenient for its further development.

III.4. Department of Computer Systems

The **Department of Computer Systems** is responsible for teaching courses in MSc specialisation **Computer Systems and Networks**, which covers processor and computer architecture, data communication, communication protocols and computer networks, development of network-based, Internet, parallel and embedded applications, design of hybrid hw/sw systems and their specification, digital signal processing, design of specialised interfaces including interfaces to Internet. Besides, the Department is also in charge of teaching several courses in the Bc programme called **Information Technology**.

Scientific and research activities of the Department are focused on architecture of hardware and software of embedded systems, parallel performance prediction and tuning, specification and design of computer-based systems, and embedded systems and their mutual communication. Other research topics are image processing and applied genetic and evolutionary algorithms, including evolvable hardware. The main areas of interest are the following:

- Application-specific architectures (high-performance embedded systems, multiprocessor systems on a chip (MPSoC, performance prediction and tuning of parallel applications),
- FPGA-based re-configurable systems (with applications in the field of gigabit networks, bioinformatics, etc.),
- digital system diagnostics, testability, and security,
- bio-inspired hardware,
- applied evolutionary algorithms.

The lectures in most of the courses are supplemented with projects or laboratory sessions, where students acquire hands-on experience and skills with the latest software packages and hardware units (workstations, multiprocessor systems, workstation clusters, RT OS, design systems for FPGA and the like), learn basics of a teamwork and project management. For the most demanding projects IBM BladeServer clusters are used.

Staff

Head of Department
>   Kotásek Zdeněk, Doc. Ing., CSc.

Deputy Head of Department
>   Sekanina Lukáš, Doc. Ing., Ph.D.

Professor
>   Dvořák Václav, Prof. Ing., DrSc.

Associate professor
>   Drábek Vladimír, Doc. Ing., CSc.
>   Kotásek Zdeněk, Doc. Ing., CSc.
>   Linhart Miroslav, Doc. Ing., CSc.
>   Sekanina Lukáš, Doc. Ing., Ph.D.
>   Schwarz Josef, Doc. Ing., CSc.

Assistant professor
>   Eysselt Miloš, Ing., CSc.
>   Fučík Otto, Dr. Ing.

Růžička Richard, Ing., Ph.D.
Strnadel Josef, Ing., Ph.D.

Assistant

Bidlo Michal, Ing.
Kořenek Jan, Ing.
Martínek Tomáš, Ing.

Technical staff

Lexa Matej, Ing., Ph.D.
Jaroš Jiří, Ing.

Ph.D. student

Čapka Ladislav, Ing.
Gajda Zbyšek, Ing.
Herrman Tomáš, Ing.
Kobliha Miloš, Ing.
Kubek Ján, Ing.
Mikušek Petr, Ing.
Pajgrt Michal, Ing.
Slaný Karel, Ing.
Stareček Lukáš, Ing.
Straka Martin, Ing.
Šimek Václav, Ing.
Škarvada Jaroslav, Ing.
Tobola Jiří, Ing.
Vašíček Zdeněk, Ing.
Winter Jan, Ing.
Žádník Martin, Ing.
Žaloudek Luděk, Ing.

Equipment

Laboratory of network architectures and applications

10 benches for development of advanced network architectures and applications, each equipped with a PC and a COMBO-PTM card. Further equipment: 4 Agilent oscilloscopes and 4 Textronix oscilloscopes (able to sample on 100MHz, 1G samples/channel), 1 logical analyser, 2 laboratory power sources, 5 digital multimetres, an MBT 250 soldering station, and a Bernstein tool kit.

Laboratory of Embedded Systems

6 benches equipped with FUJITSU DevKit16 for the development of advanced embedded applications including special peripheries in FPGA, and use of modern "Processor Expert" design systems, UNIS.

8 benches equipped with HC11 EVBU development kits for the development of simple embedded applications with the use of the most widely spread MCU Motorola.

20 benches equipped with development kits with HC08 microcontroller, FPGA, basic peripheries and interfaces for HW applications with Metrowerks CodeWarrior and Xilinx ISE Webpack - modern programmable support. Each bench contains an EZ

Digital OS 5020 oscilloscope that enables two-channel waveform display in the frequency range up to 20 MHz.

Laboratory of DPS Systems

1 bench for developing DSP applications with DSP56000 processors, Motorola.
8 benches equipped with DSK6414 kits, Texas Instruments, for work with high-performance VLIW DSP processors TMS320C6414.

Computer Peripheral Laboratory

8 benches for the tuition of:
the principles of peripheral devices design,
the principles of fieldbus communications,
the principles of control and communication with peripheral adapters
the principles of control and communication between the peripheral device adapters and peripheral devices,
the structures of mass storage memory devices.

Teaching Kits (FITkit)

1150 teaching kits for technically-oriented courses at the FIT in Bachelor and Master study programmes and for work on student semester and diploma theses. Technical support see http://www.fit.vutbr.cz/kit.

Computer servers

Four computer servers (Intel Xeon 2.67 GHz) with FPGA Virtex 5.
A computer server with COMBO6 card (Xilinx FPGA Virtex II Pro) for evolutionary design of circDITP.
Two computer servers (two dual-core Opteron 2220 processors and two 4-core Xeon 5355 processors) for evolutionary design.

Tuition

Abbr.	Course	Sem	Cr.	Hours	Lecturer
PDD	Applications of Parallel Computers	Z	0	39-0-0-0-0	Dvořák Václav, Prof. Ing., DrSc.
EVO	Applied Evolutionary Algorithms	L	5	26-0-0-12-14	Schwarz Josef, Doc. Ing., CSc.
ARC	Parallel Systems Architecture and Programming	L	5	39-0-0-13-0	Dvořák Václav, Prof. Ing., DrSc.
ACH	Processor Architecture	Z	5	39-0-0-0-13	Dvořák Václav, Prof. Ing., DrSc.
IBP	Bachelor Thesis	Z	6	0-0-0-0-78	Eysselt Miloš, Ing., CSc.
IBP	Bachelor Thesis	L	6	0-0-0-0-78	Eysselt Miloš, Ing., CSc.
IBX	BSc Thesis (abroad)	Z	9	0-0-0-0-78	Eysselt Miloš, Ing., CSc.
IBX	BSc Thesis (abroad)	L	9	0-0-0-0-78	Eysselt Miloš, Ing., CSc.

Abbr.	Course	Sem	Cr.	Hours	Lecturer
BIN	Bio-inspired Computers	L	5	26-0-0-8-18	Sekanina Lukáš, Doc. Ing., Ph.D.
SIG	Digital Signal Processing	Z	5	26-0-0-10-16	Fučík Otto, Dr. Ing.
DBS	Diagnosis and Safe Systems	Z	5	39-10-0-8-8	Drábek Vladimír, Doc. Ing., CSc.
DBS	Diagnosis and Safe Systems	L	5	39-0-0-8-5	Drábek Vladimír, Doc. Ing., CSc.
DIP	MSc Thesis Project	Z	10	0-0-0-0-156	Eysselt Miloš, Ing., CSc.
DIP	MSc Thesis Project	L	10	0-0-0-0-156	Eysselt Miloš, Ing., CSc.
DIX	MSc Thesis Project (abroad)	Z	15	0-8-0-0-100	Eysselt Miloš, Ing., CSc.
DIX	MSc Thesis Project (abroad)	L	15	0-0-0-0-130	Eysselt Miloš, Ing., CSc.
EUD	Evolutionary and Unconventional Hardware	L	0	39-0-0-0-0	Sekanina Lukáš, Doc. Ing., Ph.D.
EVD	Evolutionary Computation	L	0	39-0-0-4-0	Schwarz Josef, Doc. Ing., CSc.
GMU	Graphical and Multimedia Processors	Z	5	26-0-0-8-18	Drábek Vladimír, Doc. Ing., CSc.
HSC	Hardware/Software Codesign	Z	5	39-0-0-0-13	Fučík Otto, Dr. Ing.
KKO	Coding and Compression of Data	L	5	26-0-0-0-26	Drábek Vladimír, Doc. Ing., CSc.
IMP	Microprocessors and Embedded Systems	Z	6	39-0-8-6-12	Schwarz Josef, Doc. Ing., CSc.
INC	Digital Systems Design	L	5	39-10-0-0-3	Fučík Otto, Dr. Ing.
NAV	Design of External Adapters and Embedded Systems	L	5	26-0-16-0-10	Kotásek Zdeněk, Doc. Ing., CSc.
NAVU	Design of External Adapters and Embedded Systems: subject completed	L	0	0-0-0-0-0	Kotásek Zdeněk, Doc. Ing., CSc.
INP	Design of Computer Systems	Z	5	39-7-0-0-6	Drábek Vladimír, Doc. Ing., CSc.
IPZ	Peripheral Devices	Z	4	35-0-4-0-0	Kotásek Zdeněk, Doc. Ing., CSc.
IPZ	Peripheral Devices	L	4	39-0-0-0-0	Kotásek Zdeněk, Doc. Ing., CSc.
IPN	Computer Aided Design	Z	5	26-0-0-10-16	Schwarz Josef, Doc. Ing., CSc.
PCS	Advanced Digital Systems	Z	5	26-0-0-10-16	Fučík Otto, Dr. Ing.
PTD	The Principles of Testable Design Synthesis	Z	0	39-0-0-0-0	Kotásek Zdeněk, Doc. Ing., CSc.
ROS	Real-Time Operating Systems	Z	5	26-0-0-10-16	Strnadel Josef, Ing., Ph.D.

Abbr.	Course	Sem	Cr.	Hours	Lecturer
ISP	Semester Project	Z	2	0-6-0-0-20	Eysselt Miloš, Ing., CSc.
SEP	Semester Project	Z	3	0-0-0-0-39	Eysselt Miloš, Ing., CSc.
ISX	Semester Project (abroad)	Z	4	0-4-0-0-35	Eysselt Miloš, Ing., CSc.
IVH	VHDL Seminar	L	4	0-26-0-0-13	Fučík Otto, Dr. Ing.
SES	Service Sciences	L	3	26-0-0-0-0	Eysselt Miloš, Ing., CSc.
MSZ	Final State Examination	Z	0	0-0-0-0-0	Eysselt Miloš, Ing., CSc.
ISZ	Final State Examination	Z	0	0-1-0-0-0	Eysselt Miloš, Ing., CSc.
MSZ	Final State Examination	L	0	0-0-0-0-0	Eysselt Miloš, Ing., CSc.
ISZ	Final State Examination	L	0	0-0-0-0-0	Eysselt Miloš, Ing., CSc.
SPP	Fault-Tolerant Systems	L	5	39-0-0-0-13	Drábek Vladimír, Doc. Ing., CSc.
SOD	Fault-Tolerant Systems	L	0	39-0-0-0-0	Drábek Vladimír, Doc. Ing., CSc.
ITP	Personal Computers	L	5	26-0-26-0-0	Kotásek Zdeněk, Doc. Ing., CSc.
VPCP	PC Construction (for FBM)	L	6	26-0-0-13-0	Růžička Richard, Ing., Ph.D.
ZPX	Study Stay and Professional Practice, Abroad	Z	5	0-0-0-0-0	Drábek Vladimír, Doc. Ing., CSc.
ZPX	Study Stay and Professional Practice, Abroad	L	5	0-0-0-0-0	Drábek Vladimír, Doc. Ing., CSc.

Research Projects

Teaching Kits for Technically-oriented Courses, FRVŠ MŠMT, FR2331/2007/A, 2007
Research leader: Fučík Otto

Laboratory of Applied Very Powerful Computational Systems (LAVPS), FRVŠ MŠMT, FR2360/2007/Ab, 2007
Research leader: Zemčík Pavel
Team leaders: Černocký Jan, Dvořák Václav, Kršek Přemysl

Design and Hardware Implementation of a Patent-invention Machine, GAČR, GA102/07/0850, 2007-2009
Research leader: Sekanina Lukáš
Team leaders: Bidlo Michal, Čapka Ladislav, Dvořák Václav, Gajda Zbyšek, Jaroš Jiří, Kobliha Miloš, Martínek Tomáš, Schwarz Josef, Slaný Karel, Vašíček Zdeněk, Žaloudek Luděk

Education Support for Evolutionary Design Based on Development, FRVŠ MŠMT, FR2472/2007/G1, 2007
Research leader: Škarvada Jaroslav
Team leaders: Bidlo Michal, Schwarz Josef

Software Stabilisation of Image Signal from Camera System, EVPU, JC-8500/HS1470031, 2007
Research leader: Drahanský Martin
Team leaders: Orság Filip, Vašíček Zdeněk, Zbořil František

Technical Evaluation of Biometric Systems, NBU, ST20072007006, 2007
Research leader: Drahanský Martin
Team leader: Orság Filip

Security-Oriented Research in Information Technology, CEZ MŠMT, MSM0021630528, 2007-2013
Research leader: Hruška Tomáš
Team leaders: Burget Lukáš, Burget Radek, Cvrček Daniel, Černocký Jan, Češka Milan, Drahanský Martin, Dvořák Václav, Fučík Otto, Hanáček Petr, Herout Adam, Hrubý Martin, Janoušek Vladimír, Jaroš Jiří, Kočí Radek, Kolář Dušan, Kořenek Jan, Kotásek Zdeněk, Kršek Přemysl, Křena Bohuslav, Kunovský Jiří, Martínek Tomáš, Masopust Tomáš, Matějka Pavel, Matoušek Petr, Meduna Alexander, Očenášek Pavel, Orság Filip, Růžička Richard, Ryšavý Ondřej, Sekanina Lukáš, Smrž Pavel, Strnadel Josef, Švéda Miroslav, Vojnar Tomáš, Zbořil František, Zbořil František V., Zemčík Pavel, Zendulka Jaroslav

Curricula Development, EACEA, 2006-2009
Research leader: Honzík Jan M.
Team leader: Drábek Vladimír

E!3625 - INTELLIVIDEO, MŠMT, OE219 (CZ), E!3625 (EU), 2006-2008
Research leader: Fučík Otto

Summer Course: ICS - Intensive Programme in Intelligent Computer Systems, EACEA, 2006-2009
Research leader: Honzík Jan M.
Team leader: Drábek Vladimír

Memetic Evolutional Algorithms Applied to Communication Scheduling, FRVŠ MŠMT, FR2848/2006/G1, 2006-2007
Research leader: Ohlídal Miloš
Team leader: Schwarz Josef

Methods of Polymorphic Digital Circuit Design, GAČR, GA102/06/0599, 2006-2008
Research leader: Sekanina Lukáš
Team leaders: Bidlo Michal, Drábek Vladimír, Gajda Zbyšek, Kotásek Zdeněk, Musil Vladislav, Prokop Roman, Růžička Richard, Stareček Lukáš, Vašíček Zdeněk

Toward International Learning Environment for Real-Time Safety-Critical Control Systems, EC EU, ATLANTIS-ILERT, 2006-2008,
Research leader: Švéda Miroslav
Team leader: Ryšavý Ondřej

Curricula Development, EACEA, 2006-2009
Research leader: Honzík Jan M.
Team leader: Drábek Vladimír

IT Professionals – Graduates Competitiveness Increase for European Labour Market, MŠMT, CZ.04.1.03/3.2.15.1/0003, 2006-2007
Research leader: Hruška Tomáš
Team leader: Růžička Richard

Integrated Approach to Education of DSP Students in the Field of Parallel and Distributed Systems, GAČR, GD102/05/H050, 2005-2008
Research leader: Gruska Jozef
Team leader: Češka Milan

Network Architectures for Embedded Systems, GAČR, GA102/05/0467, 2005-2007
Research leader: Srovnal Vilém
Team leaders: Bílek Jan, Dvořák Václav, Švéda Miroslav

Optimization Processes in Diagnostics of Digital Systems, GAČR, GP102/05/P193, 2005-2007
Research leader: Strnadel Josef

Leonardo da Vinci IST Requalification of Disabled Persons CZ/04/B/F/NT-168025, CEVAPO BUT, 2004-2007
Research leader: Holec Petr
Team leader: Drábek Vladimír

Optical Network in National Research and its New Applications - Programmable Hardware, CESNET, MSM6383917201, 2004-2010
Research leader: Novotný Jiří
Team leaders: Čejka Rudolf, Fučík Otto, Kořenek Jan, Kršek Přemysl, Martínek Tomáš, Matoušek Petr, Pečenka Tomáš, Smrčka Aleš, Smrž Pavel, Vojnar Tomáš, Zemčík Pavel

Rapid Prototyping Tools for Development of HW-accelerated Embedded Image- and Video-processing Applications, GA AVČR, 1ET400750408, 2004-2008
Research leader: Zemčík Pavel

Co-operation

Co-operation in the Czech Republic

- Beta Control, s.r.o., Brno, J. Gutman – co-operation in the field of embedded systems, http://www.betacontrol.cz/
- Camea, s.r.o., Brno, Ing. P. Valenta – co-operation in the field of design, development and implementation of electronic systems, http://www.camea.cz/
- ASICentrum, Praha, A. Pleštil, P. Matějka – co-operation in the higher education programme (HEP) , Mentor Graphics, http://www.asicentrum.cz/
- Institute of Informatics and Automation, AV ČR, Dr. Ing. J. Schier – co-operation in the field of design of electronic systems, http://www.utia.cas.cz/
- Computer Department FEL, Czech Technical University, Prague, Prof. Ing. Ondřej Novák, CSc., Doc. Ing. Hana Kubátová, CSc. – co-operation in the field of digital systems diagnostics and testing, http://cp.felk.cvut.cz/
- Faculty of Mechatronics, Liberec University of Technology, Doc. Ing. Zdeněk Plíva, CSc. – co-organization of PAD seminars for doctoral students, http://www.fm.vslib.cz/
- Faculty of Mechatronics, Liberec University of Technology, Doc. Ing. Zdeněk Plíva, CSc. – co-operation in the field of digital systems diagnostics and testing, http://www.fm.vslib.cz/
- Department of Computer Science, Masaryk University in Brno– co-operation in the development of a device for monitoring high-speed network and use of FPGA-based technology for net applications, Ing. J. Novotný, http://www.muni.cz/ics
- Faculty of Informatics Masaryk University in Brno, Ing. Matej Lexa PhD. – co-operation in the field of accelerated algorithm analysis in biological sequences, Doc. Václav Matyáš and Mgr. Petr Švenda – co-operation in the field of evolutionary design for wireless sensor nets, http://www.fi.muni.cz
- Cesnet, Ing. J. Gruntorád, CSc. – co-operation in the development of a device for monitoring high-speed network and use of FPGA-based technology for net applications, http://www.cesnet.cz/

International Co-operation

- Institute of Informatics, Slovak Academy of Sciences, SR, Doc. RNDr. Elena Gramatová, CSc. – co-organization of seminars for doctoral students PAD, http://www.ui.sav.sk/
- Institute of Informatics, Slovak Academy of Sciences, SR, Doc. RNDr. Elena Gramatová, CSc.. – co-operation in the field of diagnostics and testing of digital systems, http://www.ui.sav.sk/
- Norwegian University of Science and Technology, Trondheim, P. Haddow – co-operation in the field of evolvable hardware, http://www.idi.ntnu.no/~pauline/
- Pennsylvania State University, The Behrend College, Erie, USA, Dr. R. Ford – co-operation in the field of computer platform design, http://www.pserie.psu.edu/
- University of Wyoming, USA, Dr. J. Cupal – co-operation in the field of electronic systems design, http://www.uwyo.edu/
- NASA Jet Propulsion Laboratory, Pasadena, USA, A. Stoica – co-operation in the field of evolutionary circuit design, http://www.jpl.nasa.gov/
- University of York, J. Miller – co-operation in the field of evolutionary design, http://www.york.ac.uk/

Visitors to the Department

- Dr. Cyril Brom, MFF UK Praha, Agent control in RPG games – a presentation

Visits of Staff Members to Foreign Institutions

- Bidlo Michal, Ing., NASA/ESA Conference on Adaptive Hardware and Systems, Edinburgh, GB, 6 days
- Bidlo Michal, Ing., International Conference on Evolvable Systems: From Biology to Hardware, Wuhan, CN, 7 days
- Bidlo Michal, Ing., AI-2007 Twenty-seventh SGAI International Conference on Artificial Intelligence, Cambridge, GB, 6 days
- Crha Luděk, Ing., Engineering of Reconfigurable Systems and Algorithms, Las Vegas, US, 9 days
- Drábek Vladimír, Doc. Ing., CSc., University of Glamorgan, FAT UG, Pontypridd, GB, 4 days
- Drábek Vladimír, Doc. Ing., CSc., University of Galati, UGAL, 111 Domneasca, 800201 Galati, RO, 5 days
- Drábek Vladimír, Doc. Ing., CSc., 6th Electronic CircDITS and Systems Conference, Bratislava, SK, 2 days
- Dvořák Václav, Prof. Ing., DrSc., 14th IEEE Conference and Workshop on Engineering of Computer Based Systems, Tuscon, Arizona, US, 8 days
- Dvořák Václav, Prof. Ing., DrSc., The Sixth International Conference on Networking , Fort de France, Martinique, MQ, 8 days
- Dvořák Václav, Prof. Ing., DrSc., The 2007 International Conference on Intelligent Pervasive Computing, Jeju Island, KR, 10 days
- Gajda Zbyšek, Ing., Genetic and Evolutionary Computation Conference, London, GB, 7 days
- Herrman Tomáš, Ing., 10th EUROMICRO Conference on Digital System Design, Lübeck, DE, 5 days
- Jaroš Jiří, Ing., Genetic and Evolutionary Computation Conference, London, GB, 7 days
- Jaroš Jiří, Ing., IEEE Congress on Evolutionary Computation, Singapore, SG, 7 days
- Kobliha Miloš, Ing., Genetic and Evolutionary Computation Conference, London, GB, 7 days
- Kořenek Jan, Ing., The 10th IEEE Workshop on Design and Diagnostics of Electronic CircDITS and Systems, Krakow, PL, 4 days
- Kotásek Zdeněk, Doc. Ing., CSc., The 10th IEEE Workshop on Design and Diagnostics of Electronic CircDITS and Systems, Krakow, PL, 4 days
- Kotásek Zdeněk, Doc. Ing., CSc., 10th EUROMICRO Conference on Digital System Design, Lübeck, DE, 5 days
- Kotásek Zdeněk, Doc. Ing., CSc., The 22nd IEEE International Symposium on Defect and Fault Tolerance in VLSI Systems, Roma, IT, 5 days
- Kotásek Zdeněk, Doc. Ing., CSc., Technische Universitaet Vienna, TUV, Wiener Hauptstrasse, Wien, AT, 1 day
- Kubek Ján, Ing., 6th Electronic CircDITS and Systems Conference, Bratislava, SK, 2 days
- Martínek Tomáš, Ing., The 10th IEEE Workshop on Design and Diagnostics of Electronic CircDITS and Systems, Krakow, PL, 4 days
- Martínek Tomáš, Ing., Comenius University in Bratislava, Presentation Centre AMOS PriF UK, Mlynská dolina B1, Bratislava, SK, 7 days

- Martínek Tomáš, Ing., The International Conference on Field Programmable Logic and Applications, Amsterdam, NL, 5 days
- Růžička Richard, Ing., Ph.D., 10th EUROMICRO Conference on Digital System Design, Lübeck, DE, 5 days
- Růžička Richard, Ing., Ph.D., The 7th WSEAS International Conference on Applied Computer Science, Benátky, IT, 5 days
- Sekanina Lukáš, Doc. Ing., Ph.D., The 10th IEEE Workshop on Design and Diagnostics of Electronic CircDITS and Systems, Krakow, PL, 4 days
- Sekanina Lukáš, Doc. Ing., Ph.D., Genetic and Evolutionary Computation Conference , London, GB, 7 days
- Sekanina Lukáš, Doc. Ing., Ph.D., NASA/ESA Conference on Adaptive Hardware and Systems , Edinburgh, GB, 8 days
- Sekanina Lukáš, Doc. Ing., Ph.D., Kognícia a umelý život VII, Smolenice, SK, 4 days
- Sekanina Lukáš, Doc. Ing., Ph.D., International Conference on Evolvable Systems: From Biology to Hardware , Wuhan, CN, 7 days
- Sekanina Lukáš, Doc. Ing., Ph.D., The International Conference on Field Programmable Logic and Applications, Amsterodam, NL, 5 days
- Slaný Karel, Ing., 10th European Conference on Genetic Programming, Campus de Vera, Universidad Politécnica de Valencia, ES, 6 days
- Stareček Lukáš, Ing., 6th Electronic CircDITS and Systems Conference, Bratislava, SK, 2 days
- Straka Martin, Ing., 10th EUROMICRO Conference on Digital System Design, Lübeck, DE, 5 days
- Straka Martin, Ing., The 22nd IEEE International Symposium on Defect and Fault Tolerance in VLSI Systems, Rome, IT, 5 days
- Šimek Václav, Ing., XVI International Conference on Systems Science: ICSS 2007, Wroclaw, PL, 4 days
- Škarvada Jaroslav, Ing., 10th EUROMICRO Conference on Digital System Design, Lübeck, DE, 5 days
- Škarvada Jaroslav, Ing., IEEE 8th Workshop on RTL and High Level Testing, Peking, CN, 6 days
- Škarvada Jaroslav, Ing., AI-2007 Twenty-seventh SGAI International Conference on Artificial Intelligence, Cambridge, GB, 5 days
- Tobola Jiří, Ing., 10th EUROMICRO Conference on Digital System Design, Lübeck, DE, 5 days
- Vašíček Zdeněk, Ing., NASA/ESA Conference on Adaptive Hardware and Systems, Edinburg GB, 6 days
- Vašíček Zdeněk, Ing., The International Conference on Field Programmable Logic and Applications, Amsterdam, NL, 5 days

Memberships in International Organizations and Societies

- Drábek Vladimír, Doc. Ing., CSc.,
  - Czech and Slovak Simulation Society (CSSS)
- Dvořák Václav, Prof. Ing., DrSc.,
  - IEEE Computer Society
  - JUCS editorial board, Journal of Universal Computer Science,
  - Slovak Committee for DrSc. Habilitations
  - IARIA International Conference on Systems (ICONS), Member of the programme committee

- Eysselt Miloš, Ing., CSc.,
  - o Internationale Gesellschaft für Ingenieurpädagogik / International Society for Engineering Education, A, Klagenfurt (IGIP)
- Fučík Otto, Dr. Ing.,
  - o IEEE Computer Society
- Jaroš Jiří, Ing.,
  - o Special Interest Group for Genetic and Evolutionary Computation (SIGEVO)
- Kotásek Zdeněk, Doc. Ing., CSc.,
  - o IEEE Computer Society
  - o IEEE Design and Diagnostics of Electronic CircDITS and Systems (DDECS) Member of the steering committee
  - o IEEE Design and Diagnostics of Electronic CircDITS and Systems (DDECS) Member of the programme committee
  - o Chairman of the steering committee, PAD – a Czech-Slovak seminar for doctoral students,
- Růžička Richard, Ing., Ph.D.,
  - o IEEE Computer Society
- Sekanina Lukáš, Doc. Ing., Ph.D.,
  - o IEEE Computational Intelligence Society
  - o member of the editorial board of the International Journal of Innovative Computing and Applications
  - o Member of programme committees of GECCO, WEAH, AHS, BLISS, ISDA, CEC, ICES, EuroGP, EvoHOT and DDECS international conferences
- Schwarz Josef, Doc. Ing., CSc.,
  - o Czech and Slovak Simulation Society (CSSS)
  - o IEEE Neural Network Society
  - o Member of programme committees of CEC, GECCO, International Mendel Conference on Genetic Algorithms, Optimization Problems, Fuzzy Logic, Neural Networks, Rough Sets and Optimization by Building and Using Probabilistic Models (OBUPM)
- Strnadel Josef, Ing., Ph.D.,
  - o IEEE Computer Society

Publications

Manuals:

Eysselt, M.: A Study Programme at the Faculty of Information Technology, IT - Information Technology: A Follow-Up Master Study Programme, in 2007/2008, MJ servis s.r.o., Brno, CZ, FIT BUT, 2007, p. 64

Eysselt, M.: Study Programmes at the Faculty of Information Technology: IT – Information Technology, in 2007/2008, MJ servis, s.r.o., Brno, CZ, FIT BUT, 2006, p. 80

Eysselt, M.: Study Programmes at the Faculty of Information Technology: IT - Information Technology, A Survey, MJ servis s.r.o., Brno, CZ, FIT BUT, 2007, p. 20

Chapters in Books:

Sekanina, L., Martínek, T.: Evolving Image Operators Directly in Hardware, Genetic and Evolutionary Computation for Image Processing and Analysis, New York, US, Hindawi, 2007, pp. 93-112, ISBN 978-977-454-001-1

Conference Papers:

Bidlo, M.: Biologií inspirovaný vývin jako technika evolučního návrhu (Biology-inspired Development of Evolutionary Design), In: Kognice a umělý život VII, Opava, CZ, SLU, 2007, pp. 43-53, ISBN 978-80-7248-412-6

Bidlo, M.: Evolutionary Development of Generic Multipliers: Initial Results, In: Proc. of the 2007 NASA/ESA Conference on Adaptive Hardware and Systems, Los Alamitos, US, IEEE CS, 2007, pp. 405-412, ISBN 076952866X

Bidlo, M.: Výpočetní development založený na instrukcích (Instruction-based Computational Development), In: Sborník příspěvků pracovního semináře Počítačové architektury & diagnostika, Plzeň, CZ, ZČU v Plzni, 2007, pp. 53-59, ISBN 978-80-7043-605-9

Crha, L., Fučík, O., Drábek, V.: HW-Based Object Detection Method for Traffic Monitoring, In: 6th Electronic CircDITS and Systems Conference (ECS 2007), Bratislava, SK, FEI STUBA, 2007, p. 93-96, ISBN 978-80-227-2697-9

Crha, L., Fučík, O.: FPGA Implementation of a Reconfigurable License Plate Detection Method, In: Proceedings of the 2007 Engineering of Reconfigurable Systems and Algorithms, Las Vegas, NV, US, 2007, pp. 1-4

Crha, L.: A Set of Definitions for Working with Spatial Filters, In: Proceedings of the 13th Conference STUDENT EEICT 2007 Volume 4, Brno, CZ, VUT v Brně, 2007, pp. 430-434, ISBN 80-214-3410-4

Čapka, L., Vašíček, Z.: Investigating the Influence of Mutation Operators in Cartesian Genetic Programming, In: 13th International Conference on Soft Computing, Brno, CZ, FSI VUT, 2007, pp. 43-47, ISBN 978-80-214-3473-8

Dedek, T., Marek, T., Martínek, T.: High Level Abstraction Language as an Alternative to Embeded Processors for Internet Packet Processing in FPGA, In: 2007 International Conference on Field Programmable Logic and Applications, Amsterdam, IEEE CS, 2007, pp. 648-651, ISBN 1424410606

Drábek, V.: Hardware Unit for Motion Estimation, In: Electronic Devices and Systems, Brno, CZ, FEKT VUT, 2007, p. 17-21, ISBN 978-80-214-3470-7

Drábek, V.: The Evolution of Graphical Processors, In: 6th Electronic CircDITS and Systems Conference (ECS 2007), Bratislava, SK, FIIT STU, 2007, pp. 97-102, ISBN 978-80-227-2697-9

Dvořák, V., Jaroš, J., Ohlídal, M.: Optimum Topology-Aware Scheduling of Many-to-Many Collective Communications, In: Proceedings of The Sixth International Conference on Networking, New York, US, IEEE CS, 2007, p. 6, ISBN 0-7695-2805-8

Dvořák, V.: Implementation of Combinational and Sequential Functions in Embedded Firmware, In: Proceedings of the 2007 International Conference on Intelligent Pervasive Computing (IPC-07), Los Alamitos, California, US, IEEE CS, 2007, p. 80-85, ISBN 978-0-7695-3006-2

Dvořák, V.: Space-Time Trade-offs in SW Evaluation of Boolean Functions, In: Proceedings of The Second International Conference on Systems, New York, US, IEEE CS, 2007, p. 6, ISBN 0-7695-2807-4

Dvořák, V.: Time- and Space-Efficient Evaluation of Sparse Boolean Functions in Embedded Software, In: Proceedings of 14th Annual IEEE International Conference and Workshops on the Engineering of Computer-Based Systems, Los Alamitos, US, IEEE CS, 2007, pp. 178-185, ISBN 0-7695-2772-8

Gajda, Z., Sekanina, L.: Reducing the Number of Transistors in Digital CircDITS Using Gate-Level Evolutionary Design, In: 2007 Genetic and Evolutionary Computation Conference, New York, US, ACM, 2007, pp. 245-252, ISBN 9781595936974

Gajda, Z.: Metody návrhu polymorfních obvodů (Methods of Polymorphic Circuit Design), In: Sborník příspěvků Česko-slovenského semináře Počítačové architektury a diagnostika pro studenty doktorandského studia, Plzeň, CZ, ZČU v Plzni, 2007, pp. 19-25, ISBN 978-80-7043-605-9

Herrman, T.: Metodika identifikace testovatelných bloků v obvodu na úrovni RT (Methodology for Identification of Testable Blocks in RT-level CircDITS), In: Počítačové architektury a diagnostika 2007, Plzeň, CZ, ZČU v Plzni, 2007, pp. 67-76, ISBN 978-80-7043-605-9

Herrman, T.: Testability Analysis Based on the Identification of Testable Blocks with Predefined Properties, In: MEMICS proceedings 2007, Brno, CZ, Novotny, 2007, pp. 269-269, ISBN 978-80-7355-077-6

Jaroš, J., Ohlídal, M., Dvořák, V.: An Evolutionary Approach to Collective Communication Scheduling, In: 2007 Genetic and Evolutionary Computational Conference, New York, US, ACM, 2007, pp. 2037-2044, ISBN 9781595936974

Jaroš, J., Schwarz, J.: Parallel BMDA with Probability Model Migration, In: Proceeding of 2007 IEEE Congress on Evolutionary Computation, Singapore, SG, 2007, pp. 1059-1066, ISBN 1-4244-1340-0

Jaroš, J.: Optimalizace kolektivních komunikací na wormhole propojovacích sítích (Optimization of Collective Communication for Wormhole Interconnection Networks), In: Sborník příspěvků semináře Počítačové architektury a diagnostika pro studenty doktorského studia, Plzeň, CZ, ZČU v Plzni, 2007, p. 6, ISBN 987-80-7043-605-9

Kobliha, M., Schwarz, J.: Self-Organizing Migrating Algorithm for Dynamic Problems: An Experimental study, In: 13th International Conference on Soft Computing, Brno, CZ, FSI VUT, 2007, pp. 55-60

Kořenek, J., Kobierský, P.: Intrusion Detection System Intended for Multigigabit Networks, In: 2007 IEEE Design and Diagnostics of Electronic CircDITS and Systems, Krakow, PL, 2007, pp. 361-364, ISBN 1-4244-1161-0

Košek, M., Kořenek, J.: FlowContext: Flexible Platform for Multigigabit Stateful Packet Processing, In: 2007 International Conference on Field Programmable Logic and Applications, Amsterdam, IEEE CS, 2007, pp. 804-807, ISBN 1424410606

Kotásek, Z., Kubek, J.: Finite State Machine Localisation Based on IP Softcores Analysis, In: 6th Electronic CircDITS and Systems Conference, Bratislava, SK, STUBA, 2007, pp. 137-142, ISBN 978-80-227-2697-9

Lexa, M., Martínek, T., Beck, P., Fučík, O., Valle, G., Zara, I.: Genomic PCR simulation with hardware-accelerated approximate sequence matching, In: 21st European Conference on Modelling and Simulation, Praha, CZ, 2007, pp. 333-338, ISBN 978-0-9553018-2-7

Martínek, T., Lexa, M., Beck, P., Fučík, O.: Automatic Generation of CircDITS for Approximate String Matching, In: 2007 IEEE Design and Diagnostics of Electronic CircDITS and Systems, Krakow, PL, 2007, pp. 203-208, ISBN 1424411610

Martínek, T.: Automatizované mapování architektur s proměnným počtem výpočetních elementů (Automated Mapping of Architectures with Variable Number of Processing Elements), In: Počítačové architektury a diagnostika 2007. Česko-slovenský seminář pro studenty doktorandského studia, Plzeň, CZ, ZČU v Plzni, 2007, pp. 77-83, ISBN 978-80-7043-605-9

Mikušek, P.: Použití přenosem spouštěných architektur pro návrh aplikačně-specifických procesorů (Using Transport-Triggered Architectures for Application-Specific Processor Design), In: Proceedings of the 13th Conference STUDENT EEICT 2007, Brno, CZ, VUT v Brně, 2007, pp. 234-236, ISBN 80-214-3408-0

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Dvořák, V.: Efficient Evaluation of Multiple-Output Boolean Functions in Embedded Software or Firmware, In: Journal of Software, vol. 2, No. 5, 2007, Oulu, FI, pp. 52-63, ISSN 1796-217X

Dvořák, V.: LUT Cascade-Based Architectures for High Productivity Embedded Systems, In: International Review on Computers and Software , vol. 2, No. 4, 2007, Naples, Italy, IT, pp. 357-365, ISSN 1828-600X

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Slaný, K., Sekanina, L.: Fitness Landscape Analysis and Image Filter Evolution Using Functional-Level CGP, In: Lecture Notes in Computer Science, vol. 2007, No. 4445, DE, pp. 311-320, ISSN 0302-9743

Vašíček, Z., Sekanina, L.: An Evolvable Hardware System in Xilinx Virtex II Pro FPGA, In: International Journal of Innovative Computing and Applications, vol. 1, No. 1, 2007, Geneva, CH, pp. 63-73, ISSN 1751-648X

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Drahanský, M., Vašíček, Z.: Image stabilization in a video-stream, IDET 2007, Brno, CZ, EVPU, 2007, p. 1

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Dissertations:

Crha, L.: Hardware-Based Object Detection Method, Brno, CZ, 2007, pp. 1-114

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Products:

Generátor testovacích obvodů na úrovni RTL (RTL Benchmark Circuit Generation), authorized software, 2007
Authors: Pečenka Tomáš, Kotásek Zdeněk

ISTA - Stabilizace obrazu (Image Stabilization), a prototype, 2007
Authors: Drahanský Martin, Orság Filip, Hegar Antonín, Vašíček Zdeněk, Zbořil František

Nástroje pro rozdělení obvodu na RT úrovni na Testovatelné bloky (Tools for Split RTL Circuit into Testable Blocks), authorized software, 2007
Authors: Herrman Tomáš, Kotásek Zdeněk

Sada nástrojů pro analýzu testovatelnosti obvodů na úrovni RTL (Set of Tools for RTL CircDITS Testability Analysis), authorized software, 2007
Authors: Škarvada Jaroslav, Kotásek Zdeněk

Seminars

9.2.2007	Data compression using FPGA - V. Šimek Online prediction systems design – K. Slaný
16.2.2007	Introduction of the best of evolved image filters - Z. Vašíček Dynamic reconfiguration for testability and fault tolerance in FPGA – M. Straka
2.3.2007	Overview of Basic Concepts in the Area of Real-Time (Operating) Systems - J. Strnadel
30.3.2007	Evolutionary Design of Generic Multipliers Using Development - M. Bidlo FPGA implementation of sorting networks – Z. Vašíček
20.4.2007	Self-organizing migrating algorithm – M. Kobliha
27.4.2007	The usage of testable blocks for power reduction – J. Škarvada, T. Herrman
4.5.2007	Polymorphic circDITS synthesis – Z. Gajda Polymorphic gates used to optimize testing – L. Stareček
11.5.2007	Evolutionary design in sensor networks security – P. Švenda (FI MU Brno)
18.5.2007	Methodology of Increasing IP Softcore Testability Parameters – J. Kubek Checker Design for On-line Testing of Xilinx FPGA Communication Protocols – M. Straka
4.6.2007	New directions in data compression – V. Šimek Implementation of a system for dynamic data prediction – K. Slaný
5.10.2007	Introduction of new Ph.D. students – M. Žádník, L. Žaloudek, L. Čapka
8.10.2007	Tools and Methods for Automated Generating of Benchmark CircDITS – T. Pečenka Evolutionary Design of Collective Communication Based on Prediction of Conflicts in Interconnection Networks – M. Ohlídal
19.10.2007	Introduction of new PhD students – J. Winter, M. Pajgrt
2.11.2007	Introduction of new PhD students – P. Mikušek, J. Tobola
9.11.2007	Characteristics of dynamic environments – M. Kobliha Online evolution of FSM-based predictors – K. Slaný
16.11.2007	Agent control in RPG games – C. Brom (MFF UK)
23.11.2007	Heuristic approach to FSM localization in IP cores – J. Kubek NetCOPE – J. Tobola
30.11.2007	Multidimensional image processing techniques – V. Šimek Checker design using PSL language – M. Straka
7.12.2007	Experience from a course of scientific work – Z. Gajda, L. Žaloudek, Z. Vašíček
14.12.2007	Hardware acceleration of Cartesian Genetic Programming – Z. Vašíček Selective gate reconfiguration for optimized testing – L. Stareček

Other activities

- Kotásek Zdeněk, Doc. Ing., CSc.,
  - Chairman of a committee at the Czechoslovak seminar for doctoral students (Computer architecture and diagnostics)
- Kotásek Zdeněk, Doc. Ing., CSc.,
  - In charge of the organization of the "Dependability and Testing of Digital Systems" section at the EUROMICRO DSD 2007 Conference in Lübeck, Germany
- Sekanina Lukáš, Doc. Ing., PhD.
  - An invited lecture at the Mendel - International Conference on Soft Computing 2007 in Prague
  - The "Evolvable hardware" tutorial at the Genetic and Evolutionary Computation Conference 2007 in London
  - Chairman of a section at the NASA/ESA AHS and IEEE DDECS Conferences
- Work of the members of the department was cited about forty times in 2007.

Summary of two academic periods

The Department of Computer Systems is characterized by orientation towards modern computer technology, both in tuition and research, especially on reconfigurable devices (e.g. FPGA). Thanks to EU projects and co-operation with CESNET, a unique reconfigurable computing platform (Combo6) was created, which can be applied in case of efficient realization of various tasks, such as the packet router accelerator of the IPv6 protocol in Liberouter (a part of 6NET EU project), 10 Gbps monitoring SCAMPI adapter (a part of the SCAMPIEU project) and the NetFlow probe (a part of GN2 EU project), for search and comparison of strings/sequences in bioinformatics or for implementation of adaptive and evolvable circDITP. This, in co-operation with other subjects, resulted in Invea-tech, a spin-off company, and in co-operation with leading work centres (Stanford University) or companies (Xilinx) in the research area. In the field of evolvable circDITS, the results were summarized in a monograph called Evolvable Components (Springer, 2004). In co-operation with the NASA Jet Propulsion Laboratory (Caltech) several books on adaptive electronics were published. The staff of the department was awarded three Humies Prizes at the most significant conference dedicated to evolvable algorithms GECCO, and a number of other prizes. The members of the department were in charge of organization of significant international conferences, such as IEEE ECBS'04, IEEE DDECS'02 or Evolvable Systems: From Biology to Hardware 2008. A total of nine dissertations were successfully defended. Both Bachelor and Master study programme students are involved in research with success. These activities brought them a number of awards, e.g. grants from Honeywell and GE. FPGA and other modern technologies became standard in courses offered by the department. The staff organized and completed a unique project in which each student entering the FIT can borrow (for the period of their studies) a teaching kit that supports FPGA technology, microcontrollers, and embedded applications. Thus, the students can get access to modern electronics even outside the faculty laboratories.

III.5. Computer Centre

The Computer Centre is an autonomous part of the Faculty of Information Technology. The centre guarantees the running of the computer node, computer laboratories, computer and phone VoIP network, AV technology, servers, computers, other computer technology and information systems. The computer laboratories in the Centre are utilised both for the scheduled teaching hours and for work on projects, diploma projects and research projects.
Apart from the scheduled teaching hours, the laboratories are open to all students of the FIT daily, including the weekends.
The Computer Centre was moved to new buildings (L, M, N and O) in 2006. The new node, servers, server laboratories, workshop, etc. are located in the basement of L. There are offices and other service rooms on the ground floor of L. Students are provided with three computer pavilions (M, N, and O) with a central entrance on the first floor. Each pavilion has 120 workstations and a total capacity of 300 seats.

Staff
Head of the Centre
Lampa Petr, Ing.
Deputy Head
Čejka Rudolf, Ing.
Computer Centre Operation
Dupalová Helena
System Integrator
Gaďorek Petr, Ing.
Information System Administrator
Michal Bohumil, Ing.
Computer Network Administrator
Lampa Petr, Ing.
OS Administrators
Čejka Rudolf, Ing.
Kašpárek Tomáš, Ing.
Programmer
Skokanová Jana, Mgr.
Technical Staff
Kappler Karel
Kreslík František, Ing.
Halas Jaromír
Audio/Video Devices Maintenance
Juříček Zdeněk
Vrška Luděk
Computer Centre Service
Habrdová Stella
Nečasová Milena
Pagová Ywetta
Samsonová Radomíra

Equipment

Teaching and Research Laboratories
- Laboratories with PCs and Windows XP/Linux systems (180 workstations)
- Three unscheduled computer laboratories (60 workstations)

Special Instrumentation and Computers
- Five IBM BladeCenter servers with 12 modules each with two Intel Xeon 2,8GHz processors, 1 GB RAM and 40 GB system disk, with 14 modules each with 2 Intel Xeon 3,2 GHz processors, 2 GB RAM and 36 GB, and 22 modules with 2 dual-core AMD Opteron 2,2 GHz processors, 4 GB RAM and 36GB disks. The modules are linked through internal gigabit switches and each of them has a capacity of a server – a total of 58 two/four-processor servers,
- Two SuperMicro SC836 research database servers, 2 double-core Intel 2,66 GHz/4MB processors, 16 GB RAM, RAID6 4TB disk array,
- Two SuperMicro 1620 servers, two dual-core Intel 3 GHz/4MB processors, 32 GB RAM, 300 GB HDD,
- Two SuperMicro 2620 servers, two four-core Intel 2,66 GHz/4MB processors, 32 GB RAM, 300 GB HDD,
- Three SuperMicro SC933 file servers with RAID-5 disk arrays with a total capacity of 15 TB, for speech signal storing and processing,
- Four SuperMicro SC933 video servers, two Intel Xeon 3,6GHz processors, 2 GB RAM, with a RAID-5 with a 3,6 TB capacity,
- Three SuperMicro SC836 video servers, two dual-core Intel 2,33 GHz processors, 4 GB RAM, RAID-6 disk array with a 7 TB capacity,
- A student server (Web, email, file server), two Intel Xeon/Core2 dual-core processors, 4 GB RAM, a RAID-5 disk array with a 700 GB capacity,
- Novell NetWare student and staff server with two Intel Xeon processors, 2 GB RAM and a RAID-5 disk arrays with a capacity of 1,6 TB and 700 GB,
- FTP archive with a RAID-5 disk array with a capacity of 1,2 TB,
- The FIT IS server SuperMicro 6023P, two Intel Xeon four-core processors, 8 GB RAM, RAID-10 500 GB disk array,
- The faculty Web server: SuperMicro 6024H, two Intel Xeon processors, 2 GB RAM, RAID-5 300GB disk array,
- An Overland NEO 4200 back-up library with two LTO3 drives and a total back-up capacity of 96 TB,
- A3 HP LaserJet 8150 and A4 HP LaserJet 4350 high-performance network printers, and a Xerox Phaser 6300 colour printer,

Software
- Operating systems and Microsoft application software in Campus 3 licence,
- Sun Grid Engine for computations in clusters,
- A database server and Oracle 9i/10i development tools (within the Oracle academic programme),
- Microsoft Visual Studio and Microsoft Project development environments within the licence of MSDN Academic Alliance,
- Caché post-relational database system (a gift from InterSystems Corporation within the 'Caché Campus Program'),

- Object-oriented CASE system Paradigm Plus by Computer Associates,
- OrCAD Caddence Design System.
- FPGA and ASIC MentorGraphics ModlSim design system
- Adobe Photoshop, Acrobat Distiller and Premiere, Autodesk 3D studio, Caligari TrueSpace.
- Open software GNU, Mozilla, TeX, Linux, FreeBSD, MySQL, Apache, PHP5, etc.

Tuition

Abbr.	Course	Sem	Cr.	Hours	Lecturer
GUX	X Window Graphical User Interfaces	Z	5	26-0-0-8-18	Lampa Petr, Ing.
POS	Advanced Operating Systems	L	5	39-0-0-0-13	Lampa Petr, Ing.

Research Projects

Prohledávání a síťový přístup k velkým archívům audiovizuálních dat (Search and network Access to Large Archive AV Data), CESNET, 201/2006, 2007
Research leader: Burget Lukáš
Team leaders: Karafiát Martin, Kašpárek Tomáš, Szöke Igor

Security-Oriented Research in Information Technology, CEZ MŠMT, MSM0021630528, 2007-2013,
Research leader: Hruška Tomáš
Team leaders: Burget Lukáš, Burget Radek, Cvrček Daniel, Černocký Jan, Češka Milan, Drahanský Martin, Dvořák Václav, Fučík Otto, Hanáček Petr, Herout Adam, Hrubý Martin, Janoušek Vladimír, Jaroš Jiří, Kočí Radek, Kolář Dušan, Kořenek Jan, Kotásek Zdeněk, Kršek Přemysl, Křena Bohuslav, Kunovský Jiří, Martínek Tomáš, Masopust Tomáš, Matějka Pavel, Matoušek Petr, Meduna Alexander, Očenášek Pavel, Orság Filip, Růžička Richard, Ryšavý Ondřej, Sekanina Lukáš, Smrž Pavel, Strnadel Josef, Švéda Miroslav, Vojnar Tomáš, Zbořil František, Zbořil František V., Zemčík Pavel, Zendulka Jaroslav

Advancing the Automatic Language Recognition Using Streamed Audio Media, CESNET, 162/2005, 2006-2007
Research leader: Černocký Jan
Team leaders: Kašpárek Tomáš, Matějka Pavel, Schwarz Petr

Toward International Learning Environment for Real-Time Safety-Critical Control Systems, EC EU, ATLANTIS-ILERT, 2006-2008
Research leader: Švéda Miroslav
Team leader: Ryšavý Ondřej

Increasing of Qualification in the Area of Network Security and Wireless Technologies, CESNET, CESNET 2006, 2006-2007
Research leader: Matoušek Petr
Team leaders: Čejka Rudolf, Ščuglík František

Optical Network in National Research and its New Applications, CESNET, MSM6383917201, 2004-2010
Research leader: Novotný Jiří
Team leaders: Čejka Rudolf, Fučík Otto, Kořenek Jan, Kršek Přemysl, Martínek Tomáš, Matoušek Petr, Pečenka Tomáš, Smrčka Aleš, Smrž Pavel, Vojnar Tomáš, Zemčík Pavel

Visits of Staff Members to Foreign Institutions

- Čejka Rudolf, Ing., Annual Conference - NetAcad of the Czech and Slovak Republics 2007, Praha, CZ, 3 days
- Čejka Rudolf, Ing., Cisco Systems, s.r.o., V Celnici 10, 117 01 Praha, CZ, 1 day
- Kašpárek Tomáš, Ing., Insititut Dalle Molle d'Intelligence Artificielle Perceptive, IDIAP, Rue du Simplon 4, CH-1920 Martigny, 5 days
- Kašpárek Tomáš, Ing., Johns Hopkins University, JHU, 3400 N. Charles Street, MD 21218 Baltimore, US, 20 days
- Lampa Petr, Ing., XXX. konference EurOpen, Heřmanice v Podještědí, CZ, 4 days
- Skokanová Jana, Mgr., Annual Conference - NetAcad of the Czech and Slovak Republics 2007, Praha, CZ, 3 days
- Skokanová Jana, Mgr., NHIBE 2007, Rhodos, Greece, 5 days

Memberships in International Organizations and Societies

- Čejka Rudolf, Ing.,
  - Czech and Slovak Simulation Society (CSSS)
- Lampa Petr, Ing.,
  - USENIX
  - SAGE

Publications

Conference Articles:

Honzík, J., M., Skokanová, J.: Internet-Aided Audio-Video Transmission and Storage of Lectures at FIT BUT in the Czech Republic, Philosophy and Technology, In: New Horizons in Industry, Business and Education, Technological Educational Institute of Crete, GR, TEI of Crete, 2007, pp. 128-131, ISBN 978-960-88785-4-9

Summary of two academic periods

After the foundation of the faculty in 2002, the number of students kept going up and consequently there was an ever increasing shortage of workstations in the laboratories.
There was no possibility to expand the laboratories located on the ground floor. A conversion of a former gymnasium into three computer laboratories meant only a temporary solution of the situation. Even then the number of laboratory workstations was insufficient. Due to fast development, the number of servers in operation went up and the room of computer node in section D became insufficient as far as power demand and cooling were concerned. Provisional measures such as closing down A015 computer laboratory and converting it into a computing node room was a makeshift solution of the situation. When designing the new buildings in Božetěchova 1, a decision was made to transfer the whole Computer Centre including the node into building L and to concentrate computer laboratories in pavilions M, N and O.

In 2006, a radical change occurred: the whole network (including the computing node) was transferred into the new L building in Božetěchova 1. The new node has been designed and built in view of further development and future increase in computing capacity. The room is cooled from a central redundant source, it is backed up from a 60kVA central back-up source, and it has its own supply generator in case of a long power failure.
The network node forms a backbone of the FIT gigabit computer network and is an important node of the metropolitan BUT network. In the node, all optical cables from distribution centres of the individual buildings in the premises are concentrated as well as optical cables of the metropolitan BUT net. A demonstration of the complexity and wide expanse of the computer network – there are endings of 420 internal fibres and of 120 external fibres of optical cables.

It was the transfer of external optical cables which was the critical step in the whole operation.
It was done step by step to ensure communication in the original node as well as in the new one. The whole operation was successfully completed in early June in 2006 without any break in operation.

A total of nine open 19˝ cabinets are ready for servers installation. Each cabinet contains a distributed KVM switch, and a patch panel of structured cabling with 24 Cat6 ports and three independently fused 230V/16 A sockets. All servers are linked through a gigabit Ethernet technology directly to the active backbone element.
The critical servers are equipped with RAID-5 disk arrays, which are fault tolerant in case of a defect of one disk. Moreover, the files are regularly backed-up (incrementally every day) in an Overland NEO 4200 tape library with a total capacity of 48 TB (96 TB with compression).

The FIT computer network is based on Ethernet gigabit technology with switches at the third level. The central element of the network is a fully redundant modular switch Extreme Networks Black Diamond 8810 with 10 modules with a total of 216 ports (1 Gb/s) and 2 modules with 8 ports (10 Gb/s). The FIT computer network is linked to the metropolitan network and to CESNET2 – the national network for science and research – at a speed of 10 Gb/p. The distribution centres in the buildings are connected by redundant optical links two to four times 1 Gb/p. Further redundancy in the network is provided by a back-up switch/router, which serves VoIP telephony in the first place but in case of failure of the main switch guarantees a connection of the critical servers through VRRP and MSTP protocols.