

FACULTY OF INFORMATION TECHNOLOGY

BRNO UNIVERSITY OF TECHNOLOGY

ANNUAL REPORT 2002

BRNO 2002

CONTENT

I.	Introduction	3
II.	Areas of activities at the FIT BUT in 2002	
II.1	Study programme – First-Level Study and Bachelor’s Study Programme	8
II.2	Creative Activities, Research and Postgraduate Doctoral Study	10
II.3	International Relations	18
II.4	Lifelong Education	20
II.5	Dislocation, Modernization and Faculty Development	21
II.6	Library	22
II.7	Academic Senate - Annual Report 2002	23
II.8	Student Organizations	25
III.	Departments at the FIT BUT in 2002	
	Department of Information Systems	27
	Department of Intelligent Systems	35
	Department of Compter Graphics and Multimedia	45
	Department of Computer Networks	53
	Computer Centre	67

ANNUAL REPORT 2002

FACULTY OF INFORMATION TECHNOLOGY BRNO UNIVERSITY OF TECHNOLOGY

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 was among the best technical universities in Europe.

During World War II the school was, as all other high schools were, 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. Since 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 rewarded by unanimous 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. Organizational and economic activities related to the foundation of the FIT and transformation of the FEECS into the FEEC were crowned by the decision of the Rector of BUT to appoint **Prof. Ing. Radimír Vrba, CSc.**, Dean of the FEEC and **Prof. Ing. Tomáš Hruška, CSc.**, Dean of the FIT to 1st January 2002. Thus ended the existence of the original Faculty of Electrical Engineering with all its authorities and structures.

BUT was directed by **Prof. Ing. RNDr. Jan Vrbka, DrSc.** in the last year of his first three-year term of office, the former Dean of the Faculty of Mechanical Engineering, who was re-elected Rector of BUT for another three years by the Academic Senate of BUT in November 2002. He entered the second term of office in February 2003. **Doc. Ing. František Zbořil, CSc.**, a member of the Department of Intelligent Systems, was re-elected chairman of the Academic Senate of BUT. **Ing. Jaroslav Švec**, a student of postgraduate doctoral study at the FIT was elected chairman of the Students' Chamber of the Academic Senate of BUT.

During the 2nd session of the Academic Senate of the FIT on 15th January 2002, **Prof. Ing. Tomáš Hruška, CSc.** was elected unanimously the new Dean of the FIT and he appointed 4 Vice-Deans. The Dean of the faculty is elected and the Vice-Deans are approved by the Academic Senate of the faculty for a three-year term of office. The Vice-Deans are in charge of research and creative activities, international and external relations and campus development together with the relevant Dean's Office Departments. The Scientific Board, the Pedagogical Council and the Disciplinary Board are the Dean's advisory bodies. The Faculty Secretary is responsible for faculty organization, development and economic issues, which are carried out by the relevant Dean's Office Departments. In 2002 there was teaching staff of 30 members and 849 students in all state-supported study programmes.

In the first year of the three-year term of office the Faculty management included:

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. Zdeněk Bouša	Vice-Dean, Campus Development

On 1st January 2002, after winning a competition, Ing. **Zdeněk Bouša** acceded the office of the Faculty Secretary. **Doc. Ing. Jaroslav Zendulka, CSc.**, Head of the Department of Information Systems, was elected the Chairman of the Academic Senate of the FIT.

Ing. Petr Lampa, Head of the Computer Centre FIT BUT, was elected the first Vice-Chairman of the Academic Senate of the FIT.

Stanislav Chromčák, a student of BUT, was elected the second Vice-Chairman of the Academic Senate of the FIT, and also the President of the Student Union FIT BUT.

Ing. Josef Schwarz, CSc., became the Trade Union representative in the faculty management.

In the first year the faculty consisted of four departments and the Computer Centre:

- Department of Information Systems
- Department of Intelligent Systems
- Department of Computer Graphics and Multimedia
- Department of Computer Systems
- Computer Centre

In 2002, the FIT continued tuition in two running out Bachelor's and Master's study programmes **Electrical Engineering and Computer Science (EI)**, registered in 1999 according to University Education Act. These current study programmes will probably continue until the end of the academic year 2006/2007. In 2002, the FIT also provided tuition in the doctoral study programme **Information technology (DIT)**. In 2002/2003 a new three-year **Bachelor's study programme Information technology** was introduced to the faculty. In 2005/2006 a two-year follow-up **Master's study programme Information Technology** will be launched. These new study programmes correspond to the Bologna Declaration on European Education Area and their structure is fully compatible within Europe.

Study programmes taught at the FIT in 2002:

Bachelor's study programme Electrical Engineering and Computer Science

Nominal length of study: 3,5 years

Line of study Computer Science and Engineering

Master's study programme Electrical Engineering and Computer Science

Nominal length of study: 5 years

Line of study Computer Science and Engineering

Doctoral study programme

Nominal length of study: 3 years (internal form) or 7 years (combined form)

Line of study Information Technology (DIT)

New Bachelor's study programme Information Technology

Nominal length of study: 3 years

Line of study Information Technology (BIT)

New follow-up Master's study programme Information technology will be launched at the FIT in 2005/2006 with the following specializations:

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

In 2002, 5 Bachelors, and 100 students of the five-year Master's study programme graduated at the FIT. Two students completed the PhD. study programme. 341 new students entered the first year of internal study, 21 students entered the postgraduate doctoral study, all in the internal form, and there was one foreign PhD. student. In 2002, tuition in English

was provided for 11 foreign students who pay their tuition fees. One member of the academic staff, Prof. Ing. Miroslav Švéda, CSc. from the Department of Computer Systems, completed the habilitation proceedings.

The most significant events and activities, which influenced the life at the Faculty, were:

- Accreditation Board of the Ministry of Education of the Czech Republic approved the establishment of the new Faculty of Information Technology (FIT) to 1st January 2002
- elections to the Academic Senate of the FIT on 7th January 2002
- inauguration of the new faculty management on 1st January 2002
- Open Day at the FIT BUT on 15th January 2002,
- the traditional faculty ball organized at a high level in the new BUT Centre, on 25th January 2002
- work on the innovation of the long-term development of BUT
- work on the innovation of the long-term faculty intention
- activities of the pedagogical staff of the FIT related to the new study programmes
- inauguration ceremony at the Faculty of Information Technology which took place on 16th September 2002, together with the opening of the new lecture halls at 2, Božetěchova Street, a computer laboratory donated by Siemens and new computer laboratories in the reconstructed former gymnasium
- in 2002, 5 projects of the Grant Agency of the Czech Republic (GACR) and 10 projects of the University Development Fund (FRVS) completed at the FIT were accepted
- Doc. Dr. Ing. Pavel Zemčík was involved in co-operation of the FIT and TEI Crete on the “Intensive programme“ within the framework of SOCRATES and on the Master’s study programme
- participation at the fair GAUDEAMUS 2002 with presentations of new study programmes
- activities of pedagogical staff connected with information sessions at different types of secondary schools
- Final State Examinations
- first graduations at the FIT, on 24th July 2002
- activities of Prof. RNDr. Milan Češka, CSc., Vice-Dean for Science and Research, and Doc. Ing. Vladimír Drábek, CSc., Vice-Dean for Education concerned with transformation of study plans aiming at a wider choice of optional courses
- successfully completed admission of first year students for internal studies for a degree as well as for doctoral studies
- first immatriculation of first-year students at the FIT
- Doc. Ing. Zdeněk Kotásek, CSc., organization of IEEE Design and Diagnostics of Electronics Circuits and Systems, a conference held from 17th to 19th April 2002
- activities of Doc. Ing. Vladimír Drábek, CSc. and Ing. Miloš Eysselt concerned with defining the mechanism for internal and inter-faculty distribution of funds for tuition (especially FIT / FEEC) and mutual payment for tuition
- activities of Prof. Ing. Jan M. Honzík, CSc., Vice-Dean for Public Relations related to his office of the National Co-ordinator EUA-ECTS/DS
- activities of Prof. Ing. Jan M. Honzík, CSc. aimed at completion of the current research project, at creation of a future inter-faculty research project, and at a

development programme implementing the Bologna process under the conditions of the new faculty

- activities of Ing. Zdeněk Bouša, Vice-Dean for Campus Development, focused on dislocation issues, mainly the general dislocation and investment issues, and the faculty capacity for tuition, especially the reconstruction and completion of the lecture rooms, the reconstruction of the south premises and the transport system at the premises of the FIT in Božetěchova Street
- activities of Ing. Zdeněk Bouša, Vice-Dean for Campus Development, concerned with increasing the economic parameters of the faculty budget aimed at maximum increase of the pay for the academic staff of the FIT
- activities of the AS members, mainly Doc. Ing. Jaroslav Zendulka, CSc. and Ing. Petr Lampa, focused on faculty organization, development, and economic issues
- activities of the work group involved in creation of an electronic information system at the FIT aiming at transforming all agendas at the FIT (especially the study agenda) gradually into the electronic form
- activities related to research projects
- election of the candidate for the position of the Rector of BUT
- CSEW 2002 (Computer Science Education Workshop), from 7th to 8th November 2002 at the premises of Žilina University in Súl'ov, Slovak Republic. Prof. Ing. Tomáš Hruška, CSc., Doc. Ing. Vladimír Drábek, CSc. and Doc. Ing. Jiří Kunovský, CSc. took part in the traditional meeting of Departments of Computer Science and related areas.

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 of the FIT. At the same time I thank all employees who contributed to the functioning of the FIT in its first year of existence, for the extraordinary efforts devoted to 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 BUT IN 2002

II.1 Study Programme –

First-Level Study and Bachelor's Study Programme

At the end of 2002, there were 1081 students studying at the FIT in all study programmes including the doctoral one. See the following table:

Specialization	Number
EI-MGR-5, VTI	664
IT-BC-3	331
IT-DR-3	86
Total	1081

In 2002 the first admission process for the three-year Bachelor's study programme Information Technology, accredited at the FIT on 2nd January 2002, took place. As the new study programme Information Technology is linking up well to the tradition of the running out study programme Electrical Engineering and Computer Science with the specialization Computer Science and Engineering, we can compare the numbers of students interested in the specialization in the following table:

Academic year	Applicants	Admitted
1996/97	229	120
1997/98	251	130
1998/99	245	140
1999/00	212	120
2000/01	200	129
2001/02	468	280
2002/03	2145 ^{*)}	340

^{*)} „2145“ is the number of applications. Until the academic year 2001/2002 the students had not been specialized sooner than at the end of the first semester, in fact, they were students who had already been admitted to the faculty.

The admission process at the FIT took place from 10th to 12th June 2002, with the backup date of 8th July. 2145 applicants participated in it. The entrance examinations were only gently adapted and consisted of two written examinations – one in mathematics (MAT) and the other, optionally, either in physics (FYZ) or in fundamentals of informatics (INF). 23% applicants chose physics and 77% informatics.

87% of the total number of applicants turned up to sit for the entrance examination.

The maximum possible number of points was 25 per one written examination.

The limit for admission was 44 points minimum out of 50 points.

Those who were to be admitted had to achieve a total of 25 points minimum, mathematics 10 points min, physics 6 points min., and informatics 10 points min.

Total numbers:

Admitted: 448

Registered: 340

Refused (lack of capacity): 1114

Failed: 297

Absent: 281

Admitted after appeal and revision: 5 applicants

10 graduated applicants (MSc. or Bc.) were admitted without the entrance examination

Applicants for admission at the FIT were successful by 21%.

Written examinations statistics:

MAT: 1864 examinees, average 17.74, deviation 5.38

FYZ: 403 examinees, average 16, deviation 6.21

INF: 1460 examinees, average 18.61, deviation 4.62

Total: average 35.77, deviation 9.13

Comprehensive Examinations and the Second-Level Study

The limit of weighted study average, which makes an exemption from the examination possible, was set to be 2,5 in 2001/02. The total of 27 students applied for the comprehensive examination, 19 students came to sit for it, 13 students passed it, **5 of whom defended the Bc. Degree**. The total number of students entering the second level of study was 95. The structure of the oral part of the **Final State Examination** was modified. Two themes were settled: Hardware and Software. Besides the defence of the thesis each student had to answer one question from each of the two themes. 100 undergraduates passed the Final State Examination.

Number of graduates in Computer Science and Engineering

Specialization	1999	2000	2001	2002
CSE	77	96	107	100

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

II.2 Science, Research and Postgraduate Doctoral Study

The new faculty continues in the tradition of basic and applied research in the area of computer hardware, software, prototypes of computer systems, and application of information technology in practical life. The main research areas at the FIT BUT in 2002 were the following:

- Information Systems
- System Modelling and Simulation
- Artificial Intelligence
- Computer Graphics and Multimedia
- Computer Architecture
- Speech Processing
- High Performance Computing
- Petri Nets

Regarding the research activities at the FIT, some important events which could influence the faculty development in coming years are listed below:

- Elaboration of a Conception of Creative Activities in the Long-Term Intention of the FIT BUT for the period 2002 – 2005.
- Application for extension of the Research Project MSM262200012 till 2004 and discussions on the conception, content and staffing of a new inter-faculty research project.
- Formation of a co-ordination group that should help to increase the number of grants and projects the faculty will be involved in, including the EU ones.
- Obtaining the prestige international grant *Multimodal meeting manager* dealt with in the framework of IST (Information Society Technology) in the 5th framework programme.
- Elaboration of six Expression of Interest documents, which formed basis for setting the priorities of the 6th framework programme by the European Commission and for possible involvement of the faculty staff in projects such as Excellence Network and Integrated Projects.
- An offer of seven research projects for co-operation with the well-recognized research institute Fraunhofer Gesellschaft (SRN).
- The information system of the faculty, which helps to improve the quality of its research infrastructure, was created. (A substantial part of this report has also been generated as an output of the mentioned information system.)
- Two habilitations have been started in the area of Computer Science and Engineering

II.2.1 Habilitations in 2002

Name: Prof. Ing. Miroslav Švéda, CSc.
 Department: UPSY FIT VUT
 Area: Computer Science and Engineering
 Date: 15th May 2002

II.2.2.1 European Union Projects at the FIT in 2002

Agency	Theme	Project Code	Name of the Project	Total in thous. CZK
EU-HLT	IST	2001-34485	Multi Modal Meeting Manager	2 257

II.2.2.2 Grant Agency (GAČR) Projects at the FIT in 2002

GAČR	Name of the project	Total in thous. CZK
102/00/1017	Modelling, verification and prototyping of distributed applications using Petri nets	496
102/01/1531	Formal methods of diagnosing digital circuits – testable design verification	472
102/01/1485	Medium for development, modelling and application of heterogeneous systems	626
102/02/0507	Computer graphics algorithms with FPGA support	789
102/02/0124	Voice technologies for support of information society	256
102/02/0503	Parallel system performance prediction and tuning	232
102/02/1032	Embedded control systems and their inter-communication	309
102/01/D141	Development in the area of human tissues FEM models creating for biomechanics applications	154
102/02/D108	Data-driven and anthropic coding and recognition of speech	86
Total		3 420

II.2.2.3 University Development Fund (FRVŠ) Projects at the FIT in 2002

FRVŠ	Theme		Total
MŠMT		Name of the project	thous.
			CZK
1834/2002	F1	Intelligent systems – preparation of a course	96
1833/2002	F1	Doctoral study programme – Information Technology at BUT	162
1795/2002	F1	Enhancement and superior practice education project management course	86
1959/2002	G1	PNtalk system for application prototyping	107
1956/2002	G1	Efficient methods of solving large systems of linear algebraic equations	91
1948/2002	G1	Methods of formal analysis and verification in Object-Oriented Petri nets	117
1831/2002	G1	Modern methods of language parsing	107
1794/2002	G1	Knowledge discovery for similarity search in multimedia databases	124
1754/2002	G1	Evolution approaches to digital circuit testability enhancement	112
Total			1 002

II.2.2.4 Research Project at the FIT in 2002

Research project MSM262200012, Prof. Ing. Jan M. Honzík

Research project	Name of the project	Total thous. CZK
MSM262200012	Research of information and control systems at the FIT	5 201
MSM262200012	Research of information and control systems at the FECC DCI	1 157
Total		6 358

The research project is aimed at research of theoretical and applied methods of design, verification, implementation and evaluation of information and control systems and their components covering both hardware and software. The research is directed into three areas which correspond to logical levels of the architecture of the control systems and the management support systems:

- Area of information systems and support to the management level
- Area of communication, control algorithms and process and control systems
- Data acquisition and evaluation

The whole research field is divided into the following eight areas, which are the subjects and partial aims of the research project:

- Methods and tools for system modelling
- Technology and design of information systems
- Computer graphics and multimedia in information and control systems
- Architecture of software and hardware in imbedded systems
- Computer-aided control
- Computer networks and systems of industrial automation
- Computer vision
- Sensors, digital processing and computer analysis of measured signals

Seven research teams were involved in research of individual areas (Computer graphics and Computer vision together).

The research teams included 7 professors (2850 hrs.), 15 associate professors (7440 hrs.), 43 other staff (18690 hrs.) and 63 doctoral students.

In BUT internal evaluation of research projects, this one was among the top seven projects. All evaluated aspects received the highest mark. The State Commission classified the research project as “B”.

The main target for the coming research period is to enrich the contemporary standard of knowledge in the explosively developing discipline of information and industrial technologies through new ideas and innovations. This is supported by the structure of the research teams, their management and regular evaluation. In 2002 transformation of the research project into an inter-faculty project had to be prepared as a consequence of the origin of the new FIT and the Department of Control and Instrumentation (FEEC).

The management of the project will have to be changed. The main target of the team in the following period will be a detailed analysis of achieved results, critical evaluation of the organizational structure aimed at preparing favourable conditions for further research projects of the FIT and considering the efficiency and benefits of the inter-faculty research project for both faculties.

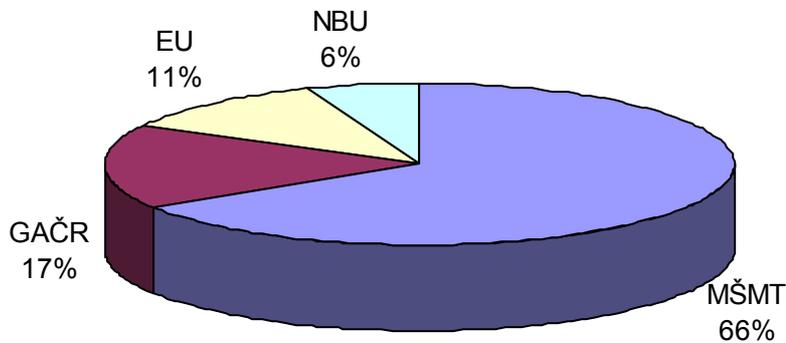
The project management headed by the investigator uses its own methodology to guarantee stable quality of the research work under changing rules, and provides general information for internal evaluation and comparison of all members of the research team. One part of this methodology is a detailed internal annual report. (<http://www.fit.vutbr.cz/research/vzamer>).

II.2.2.5 Survey of Other Projects at the FIT in 2002

Agency	Theme	Project Code	Name	Total Thous. CZK
MŠMT	MŠMT DCI	20159	Preparing of documents for accreditation of Bc study programme "Information Technologies" in the distant mode	6 817
			Programme supporting the implementation of the Bc study programmes as the expression of endorsement of Bologna declaration	
			Developing programme for specified study programmes	
MŠMT	MMI	20056	Advanced techniques for acoustic modelling in speech recognition	270
MŠMT	MMI	20059	IMPIT – International students mobility	210
European Committee Phare	Regional development	00-0047	InterPRISe – Interregional co-operation for promoting regional innovation strategies (RIS) in Europe	282
MVČR	RNI	23002	Co-operations of universities in supporting the state struggle with computer crime	90
NBU	STI	20002	Development of secure key storage device	1 209
Total				8 878

II.2.2.6 Survey of external sources in funding creative activities at the FIT in 2002

Source	Project	Number of projects	Total Thous. CZK
MŠMT	Research projects	1	5 201
MŠMT	FRVŠ projects	9	1 002
MŠMT	Other MŠMT projects	3	7 297
GAČR	GACR projects	9	3 420
EU	Projects of 5 th framework programme of the EU	1	2 257
NBU	National Security Authority projects	1	1 209
Total			20 386

Funding creative activities at the FIT from external sources in 2002**II.2.3. PhD. Doctoral Study Programme**

The doctoral study programme Information Technology with one specialization of the same name was started at the same time as the FIT BUT – 1st January 2002. The first step meant accepting a part of students specialized in Cybernetics and Computer Science from the FEECS. In June 2002 the first admission process took place.

The content and organization of the study resumes the ideas and good experience with the education of PhD. students at the FEECS BUT. The main tasks solved in this area in 2002:

- Offer of a wide choice of courses at a high professional level, a well-balanced combination of theory and applications of IT, and availability of detailed descriptions of the individual courses (in Czech and English) on the Internet for both present and future students.
- Co-operation with the FEEC BUT and the Faculty of Informatics, Masaryk University in Brno as far as the offer of courses, organization of the State Doctoral Examinations, and defenses of dissertations are concerned
- Providing study literature for the PhD. study programme, mainly with the use of financial resources coming from the FRVS project: PhD. study programme Information Technology at BUT, worth 132 thousand CZK.
- Consistent checking of the study plans of PhD. students followed by differentiated payment or even their dismissal from the PhD. study programme (in three cases).
- Record of dissertation theses and offer of new themes through the Faculty Information System.

PhD. study statistics

Year	Type of study	Number of students
1.	internal	21
	combined	0
2.	internal	23
	combined	1
3.	internal	10
	combined	2
4.	internal	5
	combined	5
5.	combined	10
6.	combined	5
7.	combined	4
Total		86

II.2.3.1. PhD. theses defended in 2002

Doctoral student Ing. Richard Růžička.

Study area Information technology

Thesis RTL testability analysis of digital circuits – a formal approach

Supervisor Doc. Ing. Zdeněk Kotásek, CSc.

Defended on 11th November 2002

Doctoral student Ing. Lukáš Sekanina

Study area Information Technology

Thesis Component Approach to Evolvable Systems

Supervisor Doc. Ing. Vladimír Drábek, CSc.

Defended on 11th November 2002

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

II.2.4. Student creativity

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

Though the FEECS split into the FIT and FEEC, the competition is held under the name STUDENT EEICT (Electrical Engineering, Information and Communication Technologies) for students of both faculties.

In 2002, the student conference took place on 25th April at the premises of BUT Under Palacky Hill. It was opened by the Deans of both faculties: Prof. Ing. Tomáš Hruška, CSc., (FIT) and Prof. Ing. Radimír Vrba, CSc., (FEEC) in the presence of Prof. RNDr. Ing. Jan Vrbka, DrSc., Rector of BUT and Doc. Ing. Eva Münster, CSc., Vice-President of the Czech Council of Higher Education Institutions and President of a committee for student creativity. Presentations of leading companies which sponsored the conference were followed by a display and evaluation of competing posters by doctoral students. Master's study programme participants from the FIT defended their work in the following specializations: information systems, theoretical informatics, modelling, graphics and hardware. Evaluation committees were formed by academics, sponsors and representatives of the Student Union. After presentations the committees chose the best contributions and suggested the financial reward for the individual authors. Thus the academic approach, attractiveness for industry and students' viewpoint were encompassed. There were 22 competitors from the PhD. study programme and 26 students of the Master's study programme of the FIT present. All contributions were successfully reviewed and were shortened and published in the Proceedings of the Conference. The electronic version of the proceedings can be found on the Internet and CDs. The final ceremony took place after all committees had completed their work and the Rector Prof. RNDr. Ing. Jan Vrbka, DrSc. and the Vice-Rector Prof. Ing. Jiří Kazelle, CSc. awarded the prizes to the winners. Sponsoring companies awarded prizes to authors of selected works, too.

Let us hope that the students' competitions will take place in future as a unique motivation for student creativity work.

The importance of the student creativity is extremely high in case of our young faculty as a considerable number of winners enter the PhD. study programme and several most outstanding graduates become new young members of the academic staff of the faculty.

Doc. Ing. Zdena Rábová, CSc.

II.3 International Relations

International activities at the FIT are dealt with by the following group: the Vice-Dean, his assistant and two teachers with considerable international experience. (Doc. Dr. Ing. P.Zemčík and Dr. Ing. J.Černocký). 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 reference service. In 2002, there were bilateral agreements between the faculty and 9 foreign universities in the framework of SOCRATES ERASMUS Programme and 23 students spent some time at study stays abroad.

Doc. Dr. Ing. P.Zemčík lectured and two students (Mr. Chromčák and Mr.Šimek) participated in the Summer School in the framework of the SOCRATES Project "Intensive Program Project in Informatics and Multimedia" at TEI Heracleion, Crete (Greece).

The following table lists foreign partners which had active bilateral agreements with the new FIT within the framework of SOCRATES.

Country	University	Erasmus code
Finland	Helsinki University of Technology http://www.hut.fi/English/	FI ESPOO 01
	Lappeenranta University of Technology http://www.lut.fi/english.html	SF LAPPEEN 01
	University of Joensuu http://www.joensuu.fi/englishindex.html	SF JOENSUU 01
France	Ecole Supérieure d'Ingénieurs en Électrotechnique http://www.esiee.fr/	F NOISY 02
Germany	Fern Universität Hagen http://www.fernuni-hagen.de	D HAGEN 01
Portugal	Universidade de Trás-os-Montes e Alto Douro http://www.utad.pt	P VILA-RE 01
Spain	Manuel Barrio Solórzano, Depto de Informática http://www.uva.es/	E VALLADO 01
United Kingdom	University of Surrey http://www.surrey.ac.uk	UK GUILDFO 01
	University of Bristol http://www.bris.ac.uk	UK BRISTOL 01

As a result of a cooperation agreement with the supra-national company ANF-Siemens Austria a new computer laboratory was opened and equipped by this partner company.

Students mobility at the FIT in 2002 - ERASMUS and others

Stays abroad

Name	Stay	University
Roman Bednařík	1 - 8 / 2002	Finland Joensuu IMPIT
Vítězslav Beran	1 - 6 / 2002	UK Guildford
	10 - 12 / 2002	UK Guildford (apart from ERASMUS)
Luděk Crha	2 - 6 / 2002	France ESIEE Paris
Michal Hronec	1 - 9 / 2002	Finland Joensuu IMPIT
David Navrátil	1 - 8 / 2002	Finland Joensuu IMPIT
Jan Pečiva	2 - 5 / 2002	UK Bristol
	10 - 12 / 2002	UK Bristol (apart from ERASMUS)
David Pulkrábek	1 - 8 / 2002	Finland Joensuu IMPIT
Jaroslav Uher	1 - 9 / 2002	Finland Joensuu IMPIT
Ing. Radek Burget	10 - 12 / 2002	Spain Valladolid
Milan Holub	9 - 12 / 2002	UK Bristol
Jiří Horák	9 - 12 / 2002	UK Bristol
Zdeněk Vráblík	9 - 12 / 2002	Austria TU Graz
Ivo Zatloukal	8 - 12 / 2002	Finland Lappeenranta
Ing. Pavel Matějka	5-8 / 2002	USA OGI Oregon
Ing. Pavel Schwarz.	5-8 / 2002	USA OGI Oregon
Ing. Petr Motlíček	9-12 / 2002	USA OGI Oregon
Ing. František Grézl	9-12 / 2002	USA OGI Oregon
Ing. Ibrahim Abu Kteisch	10-12 / 2002	Finland TU Helsinki (apart from ERASMUS)
Ing. Martin Dražanský	9 / 2002 – 12 / 2002	Germany Siegen (apart from ERASMUS)
Ing. Tomáš Kašpárek	10-12 / 2002	UK Bristol (apart from ERASMUS)
Ing. Bohuslav Křena	10-12 / 2002	Bulgaria Sofia
Václav Šimek	7 / 2002	Greece TEI Chania
	9 / 2002	Belgium KHO Oostende
Stanislav Chromčák	7 / 2002	Greece TEI Chania

Unlabelled stays: Finance SOCRATES/ERASMUS, MŠMT ČR and the mobility fund BUT IMPIT: International Masters Programme in Information Technology (finance – the government of Finland)

Visiting Students:

Name	Stay	University
Pratibha Jain	10-11 / 2002	USA, OGI Oregon
Miika Lindfors	10 / 2002 – 1 / 2003	Finland LUT Lappeenranta

II.4 Lifelong Education

Doc. Ing. Jiří Kunovský, CSc. contributed to the programme of the Third Age University in the first semester by lecturing and organizing a computer workshop, and together with three doctoral students did his teaching in computer science in the first, second and third semesters.

The first stage of the three-year MSMT project “Preparation of distance form of Bachelor’s study programme Information Technology for accreditation” was worked on. This study programme focused on e-learning and computer-aided technologies can be used for lifelong education in future.

Some staff members of the FIT also provided a seminar in informatics for the fourth-year students of the secondary school in Kpt. Jaroše Street (regular two seminars in February) and of the secondary school in Slovanské nám. (regular two seminars in May).

They also provided all-year tuition of “Selected Parts of Informatics” for the secondary school in Vídeňská Street.

In co-operation with Application Software Brno the academics of the FIT also provided training in computer disciplines at Z0/Z1 level within the framework of SIPVZ (State information policy in education) and its INDOŠ project. There were 5 cycles of training for 5 schools and in them 43 primary and secondary school teachers were fully trained.

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

II.5. Dislocation, Modernization, and Development

Together with the establishment of the Faculty of Information Technology on 1st January 2002, it was indispensable to adopt a strategy concerning its material and technical supplies and dislocation. A key material called “Building Programme“ was elaborated based on accredited study programmes, and the expected number of students and staff. Its output served as needs analysis for the individual categories of floor area.

The management of BUT decided about the final dislocation of the FIT into the premises Božetěchova 2 and 1.

In agreement with this decision a new set of three lecture halls (150 seats, 2x70 seats) at a very high tech level, and a new entrance were opened, and the second courtyard was reconstructed. 67 mil. CZK were invested and consequently the increase in number of students of the FIT in the academic year 2002/2003 could be managed. The service entrance connects the area of Božetěchova 2 with the outer traffic system and avoids vehicles passing through the baroque portal leading to the first courtyard. The reconstruction of the second courtyard partly solves the parking problems and operations in that area.

In 2002, the Cartesian monastery (Božetěchova 2 premises) was classified as part of the project “Preservation of Architectural Heritage of the Czech Republic“. At the same time a BUT investment project called *Reconstruction and Completion of the BUT Premises in Božetěchova Street in Brno* was being worked on. Three out of four south seclusions were repaired step by step including the interior, at the cost of 17 mil. CZK (1.1 mil. CZK was the contribution of the state). The Dean’s office of the FIT will be located into the reconstructed seclusions.

To manage the tuition in the academic year 2002/2003 it was necessary to take some provisional measures in 2002 and, at the same time, minimize the financial loss. The gymnasium was transformed into three computer laboratories with 21 workplaces each including equipment. The Siemens computer lab was adapted and two seminar rooms were rebuilt. The Dean’s meeting room, which can also be used for tuition of small groups of students, was built. A part of the first courtyard was reserved for parking.

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

Ing. Zdeněk Bouša
Vice-Dean for Campus Development

II.6. Library at the FIT

The library has been there since the Department of Computer Science and Engineering was founded in 1964. At present it is located in two rooms in the left wing of the premises in Božetěchova Street. It contains more than 11000 books, 1000 diploma theses, and several tens of dissertations. Subscriptions of 60 professional journals have been maintained. There are 12 seats and one computer available in the study room. One professional librarian is in charge of book records and other services. Electronic catalogues of books and journals are kept in the OpenAccess system, in 2003, a transition to the central BUT records in Aleph will be carried out.

The library managed in co-operation with BUT Central Library subscriptions of 20 new titles of journals which meet the requirements of students and the staff of the faculty, e.g. ACM Transactions on database systems, Computer Speech and Language, Microprocessor report, The Journal of visualization and computer animation, and others.

In co-operation with BUT Central Library and together with some other universities in the Czech Republic the FIT and the other faculties of BUT obtained access to the electronic information of IEEE Computer Society Digital Library. For several years the world's most significant editor of these publications - IEEE (Institute of Electrical and Electronics Engineers) - has been providing service which enables searching, studying and printing all publications "produced" by the Computer Society IEEE, which means one third of all IT publications in the world.

Jan Černocký, Dr. Ing.

II.7. Academic Senate of the FIT BUT in 2002

Academic Senate

The Academic Senate was elected for the period of January 2002 till January 2005 :

Doc. Ing. Jaroslav Zendulka, CSc.	<i>Chairman</i>
Ing. Petr Lampa	<i>Vice-Chairman</i> <i>and Chairman of the Chamber of the Academic Staff</i>
Stanislav Chromčák	<i>Vice-Chairman</i> <i>and Chairman of the Student Chamber</i>

Chamber of Academic Staff

Ing. Daniel Cvrček, PhD. (UIFS)
Ing. Vladimír Janoušek, PhD.(UIFS)
Doc. Ing. Jiří Kunovský, CSc. (UIFS)
Ing. Petr Lampa (CVT)
Doc. RNDr. Alexander Meduna, CSc. (UIFS)
Dr. Ing. Petr Peringer (UIFS)
Doc. Dr. Ing. Pavel Zemčík (UPGM)
Doc. Ing. Jaroslav Zendulka (UIFS)

Student Chamber

Stanislav Chromčák (Master's programme EI, spec. VTI)
Vlastimil Kaluža (Master's programme EI, spec. VTI) – since 24th Sept 2002
Ing. Bohuslav Křena (Doctoral programme IT)
Marek Kyršch (Master's programme EI, spec. VTI) – since 24th Sept 2002
Jaroslav Švec (Master's programme EI, spec. VTI) – till 18th June 2002
Pavel Tupec (Master's programme EI, spec. VTI) – till 18th June 2002
Zdeněk Vráblík (Master's programme EI, spec. VTI)

AS FIT Committees

Legislative Committee

Stanislav Chromčák – since 8th October 2002
Vlastimil Kaluža – since 8th October 2002
Doc. Ing. Jiří Kunovský, CSc. – *chairman*
Ing. Petr Lampa
Jaroslav Švec – till 18th June 2002
Pavel Tupec – till 18th June 2002

Economic Committee

Ing. Daniel Cvrček, PhD
Ing. Bohuslav Křena
Ing. Petr Lampa – *chairman*
Zdeněk Vráblík
Doc. Ing. Dr. Pavel Zemčík

Activities of the AS FIT in 2002

The Academic Senate of the FIT elected after the Faculty of Information Technology had been established (on 7th January 2002), first met at the constituent assembly, at eleven regular meetings and one extra meeting with the average attendance of 91%. All meetings had a quorum.

Most of the meetings dealt with legislative and economic topics, which are the responsibility of the ASs according to the University Education Act. The Academic Senate also discussed and agreed on the Long-Term Intention of the FIT BUT for the period of 2002-2005. As far as the internal regulations of the new faculty are concerned, the Admission Regulations for the Doctoral Study Programme (FIT BUT in 2002), Admission Regulations for the Master's Study Programme (FIT BUT in 2002) and Admission Regulations for the Bachelor's Study Programme (FIT BUT in 2003) were agreed on. The Dean's Regulations completing the Study and Examination Regulations of BUT and Dean's Regulations completing BUT Scholarship Regulations were discussed, as well as amendments of Rules of Procedure and the Statute of the FIT, which was approved later by the AS.

The Academic Senate discussed and approved the budget of the FIT for 2002 and checked its fulfilment. A total of 35 decisions, out of which 10 concerned internal regulations and 3 economic issues, were approved on. Other decisions referred to elections of the Dean, nominations of academic officials, the long-term intention, elections to the Academic Senate of BUT, procedures, etc. The Student Chamber actively participated in all activities of the Academic Senate FIT. After Jaroslav Švec and Pavel Tupec graduated, the AS was completed in by-elections (Vlastimil Kaluža and Marek Kyrsch). The Legislative Committee met three times in 2002 to discuss the proposals of internal regulations of the FIT and the Economic Committee met once to discuss the budget proposal. Doc. Ing. Zdena Rábová, CSc. was nominated by the AS FIT and approved by the AS BUT to become a FIT deputy in the Czech Council of Higher Education Institutions and she worked there in the sphere of student creativity.

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.
Chairman AS FIT

II. 8. Student Organizations

According to the University Education Act, it is the **Student Chamber of the Academic Senate of the FIT** (SK AS FIT), which represents the students of the FIT. The Academic Senate as well as the Student Chamber of the FIT were elected on 7th January 2002. The Student Chamber AS FIT has five members, one of them being a representative of the doctoral students. Besides the **Student Chamber** of AS FIT there is also the **Student Union of the FIT** whose aim is to promote the interests of the FIT students and continue in the long tradition of the SU FEECS. The SU FEECS was transformed into two independent organizations - SU FIT and SU FEEC - in October. The top authority – the Parliament – is a body of elected representatives of the individual lecture groups and of members who, besides the deputies, wish to take active part in student activities. Each deputy is elected for a period of one year.

The activities of SU FIT cover several areas. The deputies help students to negotiate with the FIT or BUT managements and they present students' opinions and ideas, and reversely they inform students about the activities and events at the Faculty. Furthermore, the SU FIT co-operates with other student organizations, organizes cultural events and presentations, takes part in promotions of the Faculty and BUT.

Activities of the Student Chamber of the Academic Senate (SCAS) of the FIT in 2002

Student senators regularly attended the AS FIT meetings. They participated in the Economic and Legislative Committees and agreed on the FIT budget and approved the study regulations respectively. The SCAS FIT was trying to put the purchase of students gowns through as well as amendments of some study regulations, e.g. the obligation to inform students about the exam results two days before the re-sit at the latest, or the possibility

for the students of the running out Master's study programme to ask for one more re-sit. In the end, the gowns were not bought: they were borrowed for the graduation ceremonies from the Faculty of Business and Management instead. The changes in the study regulations were accepted.

A representative of the SCAS FIT took part in a meeting of representatives of Student Chambers of ASs of faculties of electrical engineering and faculties of information technology, which was held in Plzeň. Preferential allocation of beds in the halls of residence was another important event where the members of the SCAS FIT co-operated with the faculty management - they passed a resolution concerning allocation criteria, passed them to the Dean and ensured the possibility of sending applications through the Internet. The SCAS FIT delegated its representatives to the individual work sections of the SCAS BUT.

Activities of the SU FEECS and SU FIT in 2002

The members of the SU participated both in faculty activities and those of BUT in 2002. In January, there were the first elections into the Academic Senate, the FIT Open Day, course evaluation by students, and organization of the first joint ball in co-operation with the FEEC. The SU members also helped the Sports Centre of BUT to organize the "Sportparty" and to organize the registration for courses in physical education. At the beginning of the new semester, the SU organized a non-traditional sporting event – "Desorientering". Its aim was

to help newcomers get better orientation within the campus. In April the SU members took part in a meeting informing students about study stays in foreign institutions and they also worked in committees during the students' creativity conference. They also participated in preparations for the *May festival*. In 2002, similar to previous years, students helped to present the FIT at the GAUDEAMUS fair. During the winter semester the SU FIT organized a presentation for the first-year students which made them familiar with the structure of the FIT and BUT and also gave them useful information concerning the study at the Faculty. In December, the SU started a questioning which tries to find out about accessibility of SW necessary for students projects.

Stanislav Chromčák

DEPARTMENT OF INFORMATION SYSTEMS

The Department of Information Systems provides tuition in the Master's study programme with the specialization **Information Technology**, which covers programming, formal languages and translators, database and information systems, Internet and distributed applications. The aim is to inform students about theory, technology and methods of information systems development and teach them to develop such systems based on modern tools, methods and technologies. Apart from that the Department also provides tuition in a large number of basics in the Bachelor's study programme **Information Technology** and offers subjects in the PhD. study programme **Information Technology**.

Research activities of the Department covers database technologies, information systems implementation, control of SW projects, theory of formal languages and translators. At present the members of the Department concentrate on:

- Object-oriented modelling, object-oriented database systems, database design
- Knowledge discovery in databases
- Information system implementation
- Software metrics and control of software projects
- Cryptographics protocols and security mechanisms
- Formal languages and
- Functional languages

The lectures in most courses are accompanied with projects or laboratory sessions, where students acquire necessary skills and useful experience with the latest SW packages and hardware units, team work and project management.

Staff

Head of Department

Zendulka Jaroslav, Doc. Ing., CSc.

Deputy Head of Department

Meduna Alexander, Doc. RNDr., CSc.

Professors

Honzík Jan M., Prof. Ing., CSc.

Hruška Tomáš, Prof. Ing., CSc.

Associate Professors

Meduna Alexander, Doc. RNDr., CSc.

Zendulka Jaroslav, Doc. Ing., CSc.

Lecturers

Cvrček Daniel, Ing., PhD.

Kolář Dušan, Dr. Ing.
Kreslíková Jitka, RNDr., CSc.
Ráb Jaroslav, Ing.

Postgraduate Students

Bartík Vladimír, Ing.
Burget Radek, Ing.
Elbl Stanislav, Ing.
Güttner Jakub, Ing.
Heckel Martin, Ing.
Kaláb Petr, Ing.
Kolka Milan, Ing.
Kotásek Petr, Ing.
Kubíček Vladislav, Ing.
Lorenc Luboš, Ing.
Škrkal Oto, Ing.
Švec Martin, Ing.
Vojta Tomáš, Ing.
Vurm Petr, Ing.

Equipment

The Department uses the equipment of the Computer Centre.

Tuition

Abbr	Course	Sem	Cr.	Hours	Lecturer
ADS	Algorithms and Data Structures	W	6	39-0-0-39-0	Honzík Jan M., Prof. Ing., CSc.
ADS	Algorithms and Data Structures	S	7	39-0-0-0-39	Honzík Jan M., Prof. Ing., CSc.
APR	Algorithms and Programming	S	5	39-0-0-26-0	Kreslíková Jitka, RNDr., CSc.
APS	Software Architecture and Components	W	6	39-0-0-0-26	Honzík Jan M., Prof. Ing., CSc.
APS	Software Architecture and Components	S	6	39-0-0-0-26	Honzík Jan M., Prof. Ing., CSc.
DSI	Database Systems and Design	W	6	39-0-0-6-20	Zendulka Jaroslav, Doc. Ing., CSc.
FLP	Functional and Logic Programming	W	6	39-0-0-12-14	Kolář Dušan, Dr. Ing.
INS	Information Systems	W	6	39-2-0-10-14	Hruška Tomáš, Prof. Ing., CSc.
TID	Modern theoretical informatics	W	0	39-0-0-0-13	Meduna Alexander, Doc. RNDr., CSc.
PRD	Post-Relational Database Systems	S	6	26-0-0-26-13	Kolář Dušan, Dr. Ing.
PRJ	Programming Languages	S	6	39-12-0-0-14	Hruška Tomáš, Prof. Ing., CSc.
PRO	Programming Practice	S	2	0-0-0-0-26	Kreslíková Jitka, RNDr., CSc.

PPS	Software Engineering	S	5	39-0-0-12-14	Zendulka Jaroslav, Doc. Ing., CSc.
TJD	Theory of Programming Languages	W	0	39-0-0-0-0	Hruška Tomáš, Prof. Ing.,
VPD	Selected Topics OOM in Persistent Systems	S	4	39-0-0-0-0	Hruška Tomáš, Prof. Ing., CSc.
Izp	Fundamentals of Programming	W	7	39-0-0-12-14	Kreslíková Jitka, RNDr., CSc.
IzI	Fundamentals of Programming for foreign students	W	6	39-0-0-12-14	Kreslíková Jitka, RNDr., CSc.
ZAP	Fundamentals of Translators	S	6	39-13-0-0-13	Meduna Alexander, Doc. RNDr., CSc.
ZZD	Knowledge Discovery in Databases	W	0	39-0-0-0-13	Zendulka Jaroslav, Doc. Ing., CSc.

Research Projects

Development/Dissemination of Joint Courses - (PROG) in Applied Informatics and Multimedia, EC EUA ECTS, SOCRATES-PROG, 2002-2003

Investigators: Honzík Jan M.

Intensive Programme project - IP - Applied Informatics and Multimedia, EC EUA ECTS, Socrates - IP, 2002-2004

Investigators: Honzík Jan M.

InterPRISe – Interregional Co-operation for Promoting Regional Innovation Strategies in Europe, EU - Phare, 2002

Investigators: Češka Milan, Drábek Vladimír, Dvořák Václav, Eysselt Miloš, Honzík Jan M., Hruška Tomáš, Kolář Dušan, Kotásek Zdeněk, Kreslíková Jitka, Kunovský Jiří, Schwarz Josef, Švéda Miroslav, Zbořil František, Zendulka Jaroslav

Modern Methods of Language Parsing, FRVŠ MŠMT, FR1831/2002/G1, 2002

Investigators: Hrubý Martin, Meduna Alexander, Švec Martin

Developing Program Bachelor's Study Programmes as the Expression of Support of Bologna Declaration, MŠMT, 2002

Investigators: Honzík Jan M.

Developing Program for Specified Study Programmes, MŠMT, 2002

Investigators: Honzík Jan M.

Preparing the Distance Form of Bachelor's Study Programme Information Technology for Accreditation, MŠMT, 2002-2004

Investigators: Honzík Jan M.

Enhancement and Improvement in Practical Part of the Course Called Project Management, FRVŠ MŠMT, FR1795/2002/F1, 2002

Investigators: Kreslíková Jitka

Co-operation of Universities in Supporting the State Struggle with Computer Crime, MVČR, 2002-2003

Investigators: Cvrček Daniel, Hanáček Petr, Hruška Tomáš

Development of a Secure Key Data Storage Device, NBU, SU20022002002, 2002

Investigators: Cvrček Daniel, Hanáček Petr

Knowledge Discovery for Similarity Search in Multimedia Databases, FRVŠ MŠMT, FR1794/2002/G1, 2002

Investigators: Kubíček Vladislav, Zendulka Jaroslav

Environment for Development, Modelling, and Application of Heterogeneous Systems, GAČR, GA102/01/1485, 2001-2004

Investigators: Černohorský Jakub, Češka Milan, Dražanský Martin, Güttner Jakub, Hanáček Petr, Hrubý Martin, Hruška Tomáš, Janoušek Vladimír, Jirsík Václav, Kunovský Jiří, Malec Zdeněk, Martinek David, Orság Filip, Peringer Petr, Petřek Jiří, Pivoňka Petr, Rábová Zdeňka, Řezáč David, Václavek Pavel, Vavřín Petr, Vojnar Tomáš, Zacios Dalibor, Zbořil František, Zbořil František ml.

Research of Information and Control Systems, CEZ MŠMT, MSM 262200012, 1999-2003

Investigators: Bejček Ludvík, Borecká Marcela, Bradáč Zdeněk, Cvrček Daniel, Čejka Miloslav, Čejka Rudolf, Češka Milan, Drábek Vladimír, Dvořák Václav, Eysselt Miloš, Fědor Martin, Fučík Otto, Gaďorek Petr, Hanáček Petr, Hoder Karel, Holec Radovan, Honec Jozef, Honzík Jan M., Hruška Tomáš, Janoušek Vladimír, Jura Pavel, Kolář Dušan, Kotásek Zdeněk, Kovár Martin, Kreslík František, Kreslíková Jitka, Kunovský Jiří, Lampa Petr, Linhart Miroslav, Macho Tomáš, Malec Zdeněk, Meduna Alexander, Michal Bohumil, Peringer Petr, Rábová Zdeňka, Richter Miroslav, Serba Ivo, Schwarz Josef, Šolc František, Švéda Miroslav, Valenta Pavel, Vojnar Tomáš, Zbořil František, Zemčík Pavel, Zendulka Jaroslav, Zezulka František

Co-operation:

Co-operation in the Czech Republic

- Application Software, s.r.o.
- Autocont CZ, a.s.
- Faculty of Informatics, MU Brno
- Department of Informatics FEI, VŠB – Technical University Ostrava
- LBMS, s.r.o. Praha
- Microsoft, s.r.o.
- Minolta, s.r.o.
- MP-Soft, s.r.o.Brno
- STAVCERT, s.r.o. Praha
- UNIS, s.r.o., Brno
- VEMA, a.s.
- Military Academy Brno

International Co-operation

- University in Siegen, Germany
- Microsoft Business Solutions, Denmark

Visitors to the Department

- Ing. Nick Malouf, managing director Entela Canada, Inc. Canada, 1 day
- Takehiko Tanaka, Ph.D., Wakayama University, Japan, 3 days

Visits of Staff Members to Foreign Institutions

- Burget Radek, Ing., EDBT Foundation, Institute d'Etudes de Cargese, Cargese, Corsica, FR, 8 days
- Burget Radek, Ing., Universidad de Valladolid, Valladolid, ES, 4 months
- Cvrček Daniel, Ing. PhD., University of Cambridge (UK) Computer Laboratory, 4 days
- Honzík Jan M., Prof. Ing., CSc., EUROPEAN COMMISSION, University of Technology Graz, Austria, AT, 6 days
- Honzík Jan M., Prof. Ing., CSc., EUROPEAN COMMISSION, Osnabrueck, Germany, DE, 5 days
- Kubíček Vladislav, Ing., University of Maribor, Hotel Piramida, Maribor, Heroja Šlandra 10, Slovenia, SI, 5 days

Membership in Organizations and Societies

- Honzík Jan M., Prof. Ing., CSc., IGIP, IFIP, ECTS National Coordinator
- Hruška Tomáš, Prof. Ing., CSc.,
 - ACM
 - Czech and Slovak Simulation Society (CSSS)
- Kolář Dušan, Dr. Ing.,
 - ACM
- Kreslíková Jitka, RNDr., CSc.,
 - Czech Society for Quality
 - Project Management Association
 - Czech Electrotechnical Society
- Švec Jaroslav, Ing.,
 - The European Higher Education Society

- Zendulka Jaroslav, Doc. Ing., CSc.,
 - ACM
 - Czech and Slovak Simulation Society (CSSS)

Publications

Journals:

Meduna Alexander, Kolář Dušan: One-Turn Regulated Pushdown Automata and Their Reduction, In: *Fundamenta Informatica*, 2002, No. 16, Amsterdam, NL, pp. 399-405, ISSN 0169-299968

Meduna Alexander, Švec Martin: Reduction of Simple Semi-Conditional Grammars with Respect to the Number of Conditional Productions, In: *Acta Cybernetica*, 2002, No. 15, US, pp. 353-360, ISSN 0324-721X

Meduna Alexander: Simultaneously One-Turn Two-Pushdown Automata, In: *International Journal of Computer Mathematics*, 2002, No. 80, GB, pp. 111-121, ISSN 0020-7160

Conferences:

Bartík Vladimír: Association Rule Discovery in Databases, In: *Proceedings of 5th International Conference ISM '02 - Information Systems Modelling*, Ostrava, CZ, MARQ, 2002, pp. 21-27, ISBN 80-85988-70-4

Bednář David, Kreslíková Jitka: Object Oriented Project Management, In: *PROMA 2002*, Plzeň, CZ, EVIDA, 2002, p. 10, ISBN 80-86596-13-3

Brejcha Milan, Kreslíková Jitka: Processes in Modern Management, In: *MOMAN 02*, Plzeň, CZ, 2002, pp. 155-171, ISBN 80-86596-03-6

Brejcha Milan, Kreslíková Jitka: Process-project Relation in Modern Management, In: *PRONT 2002*, Plzeň, CZ, EVIDA, 2002, p. 11, ISBN 80-86596-05-2

Burget Radek: HTML Document Analysis for Information Extraction, In: *Proceedings of 8th EEICT Conference*, Brno, CZ, FIT BUT, 2002, pp. 426-430, ISBN 80-214-2116-9

Burget Radek: Analyzing Logical Structure of a Web Site. In: *Proceedings of 5th International Conference ISM '02 - Information Systems Modelling*, Ostrava, CZ, MARQ, 2002, pp. 29-35, ISBN 80-85988-70-4

Cvrček Daniel: Creating Local Key Infrastructure, In: *Santa's Crypto Get-Together - Proceedings*, Brno, CZ, ECOM, 2002, pp. 19-25, ISBN 80-903083-2-5

Černý Stanislav, Kolář Dušan, Stružka Petr: Processor Expert, Component Application Builder for Embedded Systems In: *Proceedings of 5th IEEE Design and Diagnostics of Electronics Circuits and Systems Workshop*, Brno, CZ, FIT BUT, 2002, pp. 393-397, ISBN 80-214-2094-4

Češka Milan, Hruška Tomáš, Zendulka Jaroslav: Education in Information Technology at Brno University of Technology, In: *Proceedings of the International Conference - Advances*

in Infrastructure for e-business, e-education, e-science, and e-medicine on the Internet, L'Aquila, IT, SSGRR, 2002, p. 7, ISBN 88-85280-62-5

Elbl Stanislav: Pushdown transducer with restricted output, In: Proceedings of 8th Conference STUDENT EEICT 2002, Brno, CZ, FEED BUT, 2002, pp. 1-4, ISBN 80-214-2116-9

Güttner Jakub, Hruška Tomáš: Dynamic Object Model In Interpreted Systems, In: Proceedings of 5th International Conference ISM 02 - Information System Modelling, Ostrava, CZ, MARQ, 2002, pp. 103-110, ISBN 80-85988-70-4

Heckel Martin, Zemčík Pavel: Image Processing and Content Based Image Retrieval with Hardware Accelaration, In: East-West-Vision 2002 (EWV'02) International Workshop on Computer Vision, Computer Graphics, New Media, Vienna, AT, 2002, pp. 217-218, ISBN 3-85403-163-7

Heckel Martin: Texture Image Description for Content-Based Image Retrieval, In: Proceedings of 8th Conference Student EEICT 2002, Brno, CZ, FEED BUT, 2002, pp. 450-454, ISBN 80-214-2116-9

Heckel Martin: Texture Image Description for Content-Based Image Retrieval, In: Proceedings of 5th International Conference ISM, Ostrava, CZ, MARQ, 2002, pp. 37-44, ISBN 80-85988-70-4

Hrubý Martin, Meduna Alexander, Vurm Petr: Model of Syntax Analysis of the Formal Languages, In: Proceedings of XXIVth International Autumn Colloquium ASIS 2002, Ostrava, CZ, MARQ, 2002, pp. 109-114, ISBN 80-85988-77-1

Hruška Tomáš, Zendulka Jaroslav: Development of IT Education at Brno University of Technology, In: EAIR 24th Annual EAIR Forum, Amsterdam, NL, 2002, p. 27-28

Kotásek Petr, Zendulka Jaroslav: Describing the Data Mining Process with DMSL, In: Advances in Database and Information Systems. Vol. 2: Research Communications, Bratislava, SK, STUBA, 2002, pp. 131-140, ISBN 80-227-1744-4

Kreslíková Jitka: Formalized Process in Template of Project, In: PRONT 2002, Plzeň, CZ, 2002, p. 7, ISBN 80-86596-05-2

Kreslíková Jitka: Efficiency Team Project Solving in Project Management Education, In: Pedagogický software 2002, České Budějovice, CZ, spp, 2002, p. 1, ISBN 80-85645-46-7

Kubiček Vladislav, Zendulka Jaroslav: Construction of a Fuzzy Grammar from a Set of Sentences, In: Knowledge-Based Software Engineering, Amsterdam, NL, IOS, 2002, pp. 108-115, ISBN 1-58603-274-7

Kubiček Vladislav: A Construction of a Grammar, In: Proceedings of 5th International Conference on Information Systems Modelling, Rožnov pod Radhoštěm, CZ, MARQ, 2002, pp. 173-180, ISBN 80-859988-70-4

Smolík Petr, Hruška Tomáš: Distributed Information Systems Buliding Techniques, In: Proceedings of SSGRR 2002s Conference, L'Aquila, IT, SSGRR, 2002, p. 10, ISBN 88-85280-63-3

Vojta Tomáš: General Objects in OO Information Systems, In: Proceedings of 8th Conference Student EEICT 2002, Brno, CZ, FIT BUT, 2002, pp. 340-342

Textbooks, Lecture Notes:

Hruška Tomáš: Object-oriented Database Systems, teaching texts for INS, Brno, CZ, FIT BUT, 2002, p. 340

Kolář Dušan: Post-Relational Database Systems, teaching texts for PRD, VTI specialization, PDS course, IT specialization, Brno, CZ, FIT BUT, 2002, p. 562

Kreslíková Jitka: Fundamentals of Programming, teaching texts for IZP, IT specialization, Brno, CZ, FIT BUT, 2002, p. 270

Zendulka Jaroslav: Database Systems, teaching texts for DSI, IT specialization, Brno, CZ, FIT BUT, 2002, p. 290.

Other Activities:

- Organization of the "5th Information Systems Modelling" (ISM 2001). An international conference on theory, modelling techniques and tools, methods of information systems design and database systems (together with the Department of Intelligent Systems FIT).
- Memberships in programme committees of international scientific conferences: 37th Spring International Conference Modelling and Simulation of Systems (MOSIS 2002) Rožnov pod Radhoštěm ČR, 5th International Conference on Information Systems Modelling (ISM 2002) Rožnov pod Radhoštěm ČR, IFIP Workshop on Internet Technologies, Applications, and Societal Impact (WITASI'02) Wroclaw PL, 6th World Multi-Conference on Systemics, Cybernetics and Informatics - Invited Session Soft Computing & Emerging Systems Orlando (USA), Fifth Joint Conference on Knowledge-Based Software Engineering (JCKBSE 2002) Maribor SL, Datakon 2002 Brno CR, Advances in Databases and Information Systems 2002 (ADBIS 2002), Track 04 IC Technologies: Complex Impact to Management, Learning and Research na 24th Annual EAIR Forum (The European Higher Education Society).
- Co-organizers of workshops Santa's and Easter Crypto Get-Together
- Membership in the evaluation board of the competition called Crystal Disk within the framework of the international trade fair of information technology Invex 2002.
- Prof. Honzík became the National Co-ordinator of ECTS (the only one in the CR) in EUA (European University Association). EUA is an important European body – the only representative of all universities in EU.
- Prof. Honzík was delegated by ELA as a consulting expert of a large project - electronic identifier for VZP.
- Co-operations with Microsoft and Autocont were started with respect to courses based on Microsoft products.
- Two Socrates programmes: "Joint European MSc Program" and "Intensive Program Project" in Applied Informatics Technology and Multimedia.

DEPARTMENT OF INTELLIGENT SYSTEMS

The **Department of Intelligent Systems** provides tuition of subjects for the Intelligent Systems specialization. This specialization comprizes knowledge of several scientific areas: artificial intelligence, modelling of systems, simulation and formal analysis over system models, neural networks, genetic algorithms and fuzzy systems. The common feature are the non-traditional ways of computing that enable solving extremely complex problems, uncertainties and dynamism of processes in progress.

The graduants will be able to model and create systems with signal recognition (speech and image processing), natural speech processing and decisions based on incomplete or unprecise information, at developing intelligent control systems, intelligent information systems and intelligent robots.

Projects

Research activities at the department focuses on intelligent systems but systems for specific applications, computer-aided systems, interface design and use of parallelism at different levels are also dealt with. Other areas of interest are integration of components into embedded applications, simulations and prototyping of different configurations and formal specification and verification of the design.

Most subjects are accompanied with projects or laboratories so that students might acquire practical skills and experience with the latest software products.

Staff

Head of the Department

Hanáček Petr, Dr. Ing.

Deputy Head of the Department

Rábová Zdeňka, Doc. Ing., CSc.

Professors

Češka Milan, Prof. RNDr., CSc.

Associate Professors

Kunovský Jiří, Doc. Ing., CSc.

Rábová Zdeňka, Doc. Ing., CSc.

Zbořil František, Doc. Ing., CSc.

Lecturers

Hanáček Petr, Dr. Ing.

Janoušek Vladimír, Ing., PhD.

Peringer Petr, Dr. Ing.

Vojnar Tomáš, Ing., PhD.

Technical Staff

Marek Vladimír, Ing.

PhD. Students

Bednář David, Ing.

Černohorský Jakub, Ing.

Dao Anh Minh, Ing.
 Drahanský Martin, Ing.
 Haša Luděk, Ing.
 Hrubý Martin, Ing.
 Kočí Radek, Ing.
 Křena Bohuslav, Ing.
 Martinek David, Ing.
 Mašovský Jaroslav, Ing.
 Orság Filip, Ing.
 Petřek Jiří, Ing.
 Řezáč David, Ing.
 Schwarz Ivan, Ing.
 Turakhodjaeva Nasibakhon
 Zacios Dalibor, Ing.
 Zbořil František ml., Ing.

Equipment

The Department uses the equipment of the Computer Centre

Tuition

Abbr	Course	Sem	Cr	Hours	Lecturer
BPI	Bachelor's project VTB	W	6	0-0-0-0-78	Rábová Zdeňka, Doc. Ing., CSc.
BKR	Security and cryptography	S	6	26-0-0-0-39	Hanáček Petr, Dr. Ing.
IE1	Electrical engineering 1	W	5	26-13-0-0-13	Kunovský Jiří, Doc. Ing., CSc.
ISD	Intelligent systems	W	0	39-0-0-0-0	Zbořil František, Doc. Ing., CSc.
CPP	C a C++ Languages	W	6	39-0-0-0-26	Peringer Petr, Dr. Ing.
CPP	C a C++ Languages	S	6	39-0-0-0-26	Peringer Petr, Dr. Ing.
MSD	Modelling and simulation	W	0	39-0-9-0-0	Rábová Zdeňka, Doc. Ing., CSc.
MSI	System modelling and simulation	W	6	39-0-0-10-16	Rábová Zdeňka, Doc. Ing., CSc.
APP	Modern applications of computers	S	6	26-13-0-26-0	Kunovský Jiří, Doc. Ing., CSc.
NEU	Neural network	W	6	39-0-0-0-26	Zbořil František, Doc. Ing., CSc.
OMP	Object-oriented modelling and prototyping	W	6	26-0-0-20-19	Janoušek Vladimír, Ing., Ph.D.
OMP	Object-oriented modelling and prototyping	S	6	26-0-0-12-27	Janoušek Vladimír, Ing., Ph.D.
OS1	Operation systems 1	W	5	39-0-0-0-26	Peringer Petr, Dr. Ing.
OS1	Operation systems 1	S	5	39-0-26-0-0	Peringer Petr, Dr. Ing.
PDA	Parallel and distributed algorithms	W	6	39-0-0-0-26	Hanáček Petr, Dr. Ing.
PI1	Year project 1	W	0	0-8-0-0-18	Rábová Zdeňka, Doc. Ing., CSc.

PI3	Semester project	W	3	0-8-0-0-31	Rábová Zdeňka, Doc. Ing., CSc.
SOJ	Assembly languages	W	6	39-6-0-6-14	Zbořil František, Doc. Ing., CSc.
TI1	Theoretical informatics 1	W	6	39-12-0-2-14	Češka Milan, Prof. RNDr., CSc.
TI2	Theoretical informatics 2	S	6	39-0-0-12-14	Češka Milan, Prof. RNDr., CSc.
TAD	Theory and applications of Petri nets	S	0	39-0-6-0-0	Češka Milan, Prof. RNDr., CSc.
UIN	Artificial intelligence	S	6	39-6-0-6-14	Zbořil František, Doc. Ing., CSc.
VSL	Computability and complexity	W	6	39-12-0-0-14	Janoušek Vladimír, Ing., Ph.D.

Research Projects

Doctoral study programme Information Technology at BUT, FRVŠ MŠMT, FR1833/2002/F1, 2002

Investigators: Češka Milan, Janoušek Vladimír, Vojnar Tomáš

IMPIT – International Student Mobility, MŠMT, MMI 20059, 2002

Investigators: Abu Kteish Ibrahim, Drahanský Martin, Kašpárek Tomáš, Křena Bohuslav, Pečiva Jan, Zemčík Pavel

Intelligent Systems – Course Preparation, FRVŠ MŠMT, FR1834/2002/F1, 2002

Investigators : Drahanský Martin, Orság Filip, Zbořil František

InterpRISe – Interregional Co-operation for Promoting Regional Innovation Strategies (RIS) in Europe, EC - Phare, 2002

Investigators: Češka Milan, Drábek Vladimír, Dvořák Václav, Eysselet Miloš, Honzík Jan M., Hruška Tomáš, Kolář Dušan, Kotásek Zdeněk, Kreslíková Jitka, Kunovský Jiří, Schwarz Josef, Švéda Miroslav, Zbořil František, Zendulka Jaroslav

Methods of Formal Analysis and Verification in OO Petri Nets, FRVŠ MŠMT, FR1948/2002/G1, 2002

Investigators: Češka Milan, Křena Bohuslav

Modern methods of language parsing, FRVŠ MŠMT, FR1831/2002/G1, 2002

Investigators: Hrubý Martin, Meduna Alexander, Švec Martin

Co-operation of Universities in Supporting the State Struggle with Computer Crime, MVČR, 2002-2003

Investigators: Cvrček Daniel, Hanáček Petr, Hruška Tomáš

PNtalk system for application prototyping, FRVŠ MŠMT, FR1959/2002/G1, 2002

Investigators: Kočí Radek, Rábová Zdeňka

Development of Secure Key Storage Device, NBU, SU20022002002, 2002**Investigators:** Cvrček Daniel, Hanáček Petr**ADVANCE** - Advanced Validation Techniques for Telecommunication Protocols, EU-5FP-IST, IST-1999-29082, 2001-2003**Investigators:** Bouajjani Ahmed, Vojnar Tomáš**Environment for Developing, Modelling, and Application of Heterogeneous Systems**

GAČR, GA102/01/1485, 2001-2004

Investigators: Černohorský Jakub, Češka Milan, Dražanský Martin, Güttner Jakub, Hanáček Petr, Hrubý Martin, Hruška Tomáš, Janoušek Vladimír, Jirsík Václav, Kunovský Jiří, Malec Zdeněk, Martinek David, Orság Filip, Peringer Petr, Petřek Jiří, Pivoňka Petr, Rábová Zdeňka, Řezáč David, Václavek Pavel, Vavřín Petr, Vojnar Tomáš, Zacios Dalibor, Zbořil František, Zbořil František ml.**Modelling, Verifying, and Prototyping Distributed Applications Using Petri Nets** GAČR, GA102/00/1017, 2000-2002**Investigators:** Češka Milan, Haša Luděk, Janoušek Vladimír, Kočí Radek, Křena Bohuslav, Rábová Zdeňka, Schwarz Ivan, Vojnar Tomáš**Research of Information and Control Systems**, CEZ MŠMT, MSM 262200012, 1999-2003**Investigators:** Bejček Ludvík, Borecká Marcela, Bradáč Zdeněk, Cvrček Daniel, Čejka Miloslav, Čejka Rudolf, Češka Milan, Drábek Vladimír, Dvořák Václav, Eysselt Miloš, Fědor Martin, Fučík Otto, Gaďorek Petr, Hanáček Petr, Hoder Karel, Holec Radovan, Honec Jozef, Honzík Jan M., Hruška Tomáš, Janoušek Vladimír, Jura Pavel, Kolář Dušan, Kotásek Zdeněk, Kovár Martin, Kreslík František, Kreslíková Jitka, Kunovský Jiří, Lampa Petr, Linhart Miroslav, Macho Tomáš, Malec Zdeněk, Meduna Alexander, Michal Bohumil, Peringer Petr, Rábová Zdeňka, Richter Miroslav, Serba Ivo, Schwarz Josef, Šolc František, Švéda Miroslav, Valenta Pavel, Vojnar Tomáš, Zbořil František, Zemčík Pavel, Zendulka Jaroslav, Zezulka František

Co-Operation

Co-operation in the Czech Republic

- Department of Informatics FEI, VŠB – Technical University in Ostrava
- Department of Computers FEL, ČVUT Praha
- Department of Computer Science and Engineering WBU in Plzeň

International Co-operation

- Siemens AG Österreich, Wien, Austria
- Technische Universität Berlin
- University of Lingby, Denmark
- University of Vienna, Austria

- University of Huddersfield, Huddersfield, Department of Computer Science, UK
- University of Malta, Malta
- Université Paris 7 - Denis Diderot
- Malmö Univerzity

Visitors to the Department

- Lecture by Dr. Baynhama a Dr. Moore z GB ADI "Dynamic Systems Simulation ", 15th Sept 2002, Brno, Department of Intelligent Systems FIT BUT
- Visit by Doc. Ing. Jaroslav Sklenář, CSc., University of Malta, preparations for the ASU conference, and a joint publication.

Visits of Staff Members to Foreign Institutions

- Češka Milan, Prof. RNDr., CSc., Advances in Infrastructure for e-business, e-education, e-science, and e-medicine on the Internet, L'Aquila, SSGRR, via Giovanni Falcone, 25, Italie, IT, 7 days
- Dražanský Martin, Ing., Universität Siegen, Hölderlinstraße 3, DE, 5 months
- Hanáček Petr, Dr. Ing., Cambridge University, Cambridge University, GB, 5 days
- Křena Bohuslav, Ing., Central Laboratory for Parallel Processing, Bulgarian Academy of Sciences, Acad. G. Bonchev Str., bl. 25A, 1113 Sofia, BG, 3 months
- Křena Bohuslav, Ing., Universidade Federal de Pernambuco, Piramide Palace Hotel, Coastal Way, 1717, Natal, BR, 12 days
- Kunovský Jiří, Doc. Ing., CSc., Applied Dynamics International, Colorado Springs, US, 4 days

Membership in Organizations and Societies

- Češka Milan, Prof. RNDr., CSc.,
 - TC 10 IFIP Committee - Computer systems technology
 - IFIP WG 10.1 Computer Aided System Theory
 - Body of editors of International Journal of General Systems, Gordon and Breach Science Publisher, USA
 - Research Board of Advisors, American Biographical Institute
 - Gesellschaft für Informatik, Germany
 - Czech and Slovak Simulation Society (CSSS) in the framework of EUROSIM
 - ACM - SIGSAC - Special Interest Group on Security, Audit and Control

- Hanáček Petr, Dr. Ing.,
 - CIS (Czech and Slovak Information Society)
 - Czech and Slovak Simulation Society (CSSS)
 - ACM - SIGSAC - Special Interest Group on Security, Audit and Control
 - Center for Electronic Commerce
- Janoušek Vladimír, Ing., Ph.D.,
 - Czech and Slovak Simulation Society (CSSS)
- Jiří Kunovský, Doc.Ing.,CSc.,
 - Czech and Slovak Simulation Society (CSSS)
- Peringer Petr, Dr. Ing.,
 - Czech and Slovak Simulation Society (CSSS)
- Rábová Zdeňka, Doc. Ing., CSc.,
 - Committee of the Czech and Slovak Simulation Society (CSSS) in the framework of EUROSIM
 - AFCEA
- Vojnar Tomáš, Ing., Ph.D.
 - Czech and Slovak Simulation Society (CSSS)
- Zbořil František, Doc. Ing., CSc.,
 - Czech and Slovak Simulation Society (CSSS)

Publications

Journals:

Češka Milan, Janoušek Vladimír, Vojnar Tomáš: Modelling, Prototyping, and Verifying Concurrent and Distributed Applications Using Object-oriented Petri Nets, In: *Kybernetes: The International Journal of Systems & Cybernetics*, 2002, No. 9, GB, pp. 1289-1299, ISSN 0368-492X

Hrubý Martin, Kočí Radek, Peringer Petr, Rábová Zdeňka: Tools for Creating of Multimodels, In: *Kybernetes: The International Journal of Systems & Cybernetics*, 2002, No. 9, GB, pp. 1391-1400, ISSN 0368-492X

Hrubý Martin, Rábová Zdeňka: Modelling of Real-world Objects using the HELEF Language, In: ASU Newsletter: a publication of the Association of SIMULA Users., 28, No.1, Stockholm, SE, pp. 47-57, ISSN 1102-593X

Conferences:

Bednář David, Kreslíková Jitka: Object-oriented Project Management, In: PROMA 2002, Plzeň, CZ, EVIDA, 2002, p. 10, ISBN 80-86596-13-3

Caruana Etienne, Češka Milan, Sklenář Jaroslav: Petri Nets and their Use in Modelling of Manufacturing Systems, In: ASIS 2002 - Advanced Simulation of System, Ostrava, CZ, MARQ, 2002, pp. 17-28, ISBN 80-85988-77-1

Černohorský Jakub: Discrete simulation in Java, In: Proceedings of 8th Conference STUDENT EEICT 2002, Brno, CZ, FEEC BUT, 2002, p. 5, ISBN 80-214-2116-9

Černohorský Jakub: Optimization of Discrete Parameters of Queueing Network, In: Proceedings of XXIV International Autumn Colloquium ASIS 2002 - Advanced Simulation of Systems, Ostrava, CZ, MARQ, 2002, pp. 205-208, ISBN 80-85988-77-1

Černohorský Jakub: Simulation of Queueing Network in Java, In: Proceedings of 28th ASU Conference - The Simulation Languages, Brno, CZ, UITS FIT BUT, 2002, pp. 63-69, ISSN 1102-593X

Češka Milan, Hruška Tomáš, Zendulka Jaroslav: Education in Information Technology at Brno University of Technology, In: Proceedings of the International Conference - Advances in Infrastructure for e-business, e-education, e-science, and e-medicine on the Internet, L'Aquila, IT, SSGRR, 2002, p. 7, ISBN 88-85280-62-5

Drahanský Martin, Orság Filip: Fingerprints and Speech Recognition as Parts of Biometry, In: Proceedings of 36th International Conference MOSIS '02, Ostrava, CZ, MARQ, 2002, pp. 177-183, ISBN 80-85988-71-2

Drahanský Martin: Fingerprints Recognition, In: 16-th Biennial International Eurasip Conference Biosignal 2002, Brno, CZ, MUNI, 2002, pp. 301-303, ISBN 80-214-2120-7

Hanáček Petr, Rábová Zdeňka: Risk Analysis Models, In: Proceedings of ASIS 2002, Ostrava, CZ, MARQ, 2002, pp. 9-16, ISBN 80-85988-77-1

Hanáček Petr: Chip Cards Security Against Attacks, In: Proceedings of SmartWorld 2002, Zlín, CZ, 2002, p. 20

Hanáček Petr: Security of Mobile Devices, In: Proceedings of Security 2002, Praha, CZ, 2002, pp. 39-46

Hanáček Petr: Electronic Signature and PKI in Payment Systems, In: Proceedings of Bezpečnosť informácií vo finančnom sektore, Žilina, SK, NMC, 2002, pp. 21-26, ISBN 80-85655-20-9

Hanáček Petr: Evaluation of IT Security according to ISO/IEC 15408, In: Proceedings of Informační bezpečnost - teorie a praxe, Brno, CZ, 2002, p. 10

Hrubý Martin, Meduna Alexander, Vurm Petr: Syntax Analysis Model of Formal Languages, In: Proceedings of XXIVth International Autumn Colloquium ASIS 2002, Ostrava, CZ, MARQ, 2002, pp. 109-114, ISBN 80-85988-77-1

Hrubý Martin, Rábová Zdeňka: HELEF: A New Simulation Language, In: Proceedings of International Conference MOSIS '02, Ostrava, CZ, MARQ, 2002, pp. 39-47, ISBN 80-85988-71-2

Janoušek Vladimír, Kočí Radek: PNTalk - An Open System for Prototyping and Simulation, In: Proceedings of The 28th ASU Conference, Brno, CZ, FIT BUT, 2002, pp. 133-146, ISSN 1102-593X

Kočí Radek, Rábová Zdeňka: The PNTalk System and Interoperability, In: Proceedings of International Conference MOSIS '02, Ostrava, CZ, MARQ, 2002, pp. 73-80, ISBN 80-85988-71-2

Křena Bohuslav, Vojnar Tomáš, Češka Milan: Integrated Type Analyzer and State Space Generator, In: Brazilian Petri Net Meeting, Natal, BR, 2002, p. 6

Křena Bohuslav: A Case Study: Modelling Alternating Bit Protocol by PNTalk, In: Proceedings of 36th International Conference MOSIS'02 Modelling and Simulation of Systems, Ostrava, CZ, MARQ, 2002, pp. 65-72, ISBN 80-85988-71-2

Kunovský Jiří, Honzík Petr: Definite Integrals in TKSL, Maple and Matlab, In: Proceedings of the Fifth International Scientific Conference Electronic Computers and Informatics 2002, Letná 42, 040 01 TU Košice, SK, TU v Košiciach, 2002, pp. 22-24, ISBN 80-7099-879-2

Kunovský Jiří, Petřek Jiří, Řezáč David: Dynamic Simulations of Static Electronic Circuits, In: Proceedings of XXIVth International Autumn Colloquium ASIS 2002, Ostrava, CZ, MARQ, 2002, pp. 35-39, ISBN 80-85988-77-1

Kunovský Jiří, Petřek Jiří, Řezáč David: Solving Stiff Systems in Parallel Utilizing the Taylor Series Method, In: Proceedings of 36th International Conference MOSIS '02: Modelling and Simulation Systems Vol. 1, Ostrava, CZ, MARQ, 2002, pp. 27-31, ISBN 80-85988-71-2

Kunovský Jiří, Řezáč David, Petřek Jiří: TKSL/C and Multiple Arithmetic, In: Proceedings of the Fifth International Scientific Conference Electronic Computers and Informatics 2002, Letná 42, 040 01 TU Košice, SK, SK, TU v Košiciach, 2002, pp. 19-21, ISBN 80-7099-879-2

Martínek David: Fuzzy and heterogeneous modelling in SIMLIB/C++, In: Proceedings of 28th ASU Conference - The Simulation Languages, Brno, CZ, UITS FIT BUT, 2002, pp. 105-114, ISSN 1102-593X

Martínek David: Graph Structure for Heterogeneous Modelling, In: Proceedings of XXIV International Autumn Colloquium ASIS 2002 - Advanced Simulation of Systems, Ostrava, CZ, MARQ, 2002, pp. 209-212, ISBN 80-85988-77-1

- Martinek David:** Optimization of fuzzy model parameters, In: Proceedings of 8th Conference STUDENT EEICT 2002, Brno, CZ, FEEC BUT, 2002, pp. 465-470, ISBN 80-214-2116-9
- Orság Filip:** Some Basic Techniques of Speech Recognition, In: Proceedings of 8th Conference STUDENT EEICT 2002, Brno, CZ, FEEC BUT, 2002, p. 5, ISBN 80-214-2116
- Peringer Petr:** New Design and Implementation Concepts for SIMLIB/C++, In: Proceedings of XXIVth International Autumn Colloquium ASIS 2002, Ostrava, CZ, MARQ, 2002, pp. 201-204, ISBN 80-85988-77-1
- Petřek Jiří:** Parallel Solution of Systems of Linear Algebraic Equations, In: Proceedings of 8th conference Student EEICT 2002, Brno, CZ, FEEC BUT, 2002, pp. 473-477, ISBN 80-214-2116-9
- Řezáč David:** Solving Stiff Systems in Parallel Utilizing the Taylor Series Method, In: Proceedings of 8th Conference STUDENT EEICT 2002, Brno, CZ, FEEC BUT, 2002, pp. 486-490, ISBN 80-214-2116-9
- Schwarz Ivan:** Architecture of Distributed Simulator of PNTalk, In: Proceedings of 36th International Conference MOSIS'02 Modelling and Simulation of Systems, Ostrava, CZ, MARQ, 2002, pp. 81-88, ISBN 80-85988-71-2
- Zacios Dalibor:** Agent-Oriented Technology for Telecommunications, In: Proceedings of 8th Conference Student EEICT 2002 Vol. 3, Brno, CZ, BUT, 2002, pp. 520-524, ISBN 80-214-2116-9
- Zacios Dalibor:** Agent-Oriented Technology for Telecommunications, In: Proceedings of 36th International Conference Mosis '02 Vol. 1, Ostrava, CZ, 2002, pp. 207-213, ISBN 80-85988-71-2
- Zbořil František ml., Zbořil František:** Formal Models of Agent Systems, In: Proceedings of 36th International Conference MOSIS '02, Ostrava, CZ, MARQ, 2002, pp. 163-168, ISBN 80-85988-71-2
- Zbořil František ml.:** Simulation Languages for Agent Systems, In: Proceedings of the Fifth International Scientific Conference ECI 2002, Košice, SK, FEI TU v Košiciach, 2002, pp. 73-77, ISBN 80-7099-879-2
- Zbořil František, Kotásek Zdeněk, Mika Daniel, Strnadel Josef:** The Identification of Feedback Loops in RTL Structures, In: Proceedings of The fifth International Scientific Conference Electronic Computers and Informatics 2002, Košice, CZ, TU v Košiciach, 2002, pp. 142-147, ISBN 80-7099-879-2

Research Reports:

- Bouajjani Ahmed, Habermehl Peter, Vojnar Tomáš:** Verification of Parameterized Concurrent Systems with Resource Sharing, Paris, FR, EU-5FP-IST, 2002, p. 27

Bouajjani Ahmed, Vojnar Tomáš: Automata with Parameterized Arrays and Parameterized Networks of Automata, Paris, FR, EU-5FP-IST, 2002, p. 13

Textbooks and Lecture Notes:

Češka Milan: Theoretical Computer Science, teaching texts for FJP and TI, IT, Brno, CZ, FIT BUT, 2002, p. 134

Zbořil František: Neural Networks, teaching texts for NEU, Brno, CZ, FIT BUT, 2002, p. 198

Zbořil František: Artificial Intelligence, teaching texts for UIN, Brno, CZ, FIT BUT, 2002, p. 372

Comparative Studies:

Drahanský Martin: Evaluation of Biometric Systems – Fingerprints Technology, Siegen, DE, 2002, p. 160

Other Activities:

- Organization of ASU 2002 (Association of Simula Users - The Simulation Languages), an international conference focused on simulation in Simula language.
- Organization of the "5th Information Systems Modelling" (ISM 2001), an international conference on theory, modelling techniques and tools, methods of information systems design and database systems.
- Participation in organizing "36th International Conference on Modelling and Simulation of Systems" (MOSIS 2002), an international conference focused on simulation, esp. the theory, tools, methods and applications.
- Participation in organizing the inter-faculty students conference EEICT 2002.
- Memberships of programme committees of international scientific conferences (MOSIS 2002, CR, ASIS 2002, CR, ISM 2002, CR, ECI 2002, SK, ASU 2002, CR, ISAS-SCI 2002, USA)
- Membership of CSSS Committee (Czech and Slovak Simulation Society)

DEPARTMENT OF COMPUTER GRAPHICS AND MULTIMEDIA

The **Department of Computer Graphics and Multimedia** is responsible for teaching courses in the MSc. specialization called Computer Graphics and Multimedia, which covers computer graphics principles, multimedia principles, man-machine interface principles, image and sound processing and compression, application interfaces for computer graphics and multimedia applications programming, 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 **Fundamentals of Computer Graphics** and **Man-machine Interface Design** in the BSc. study programme Information technology.

Research activities of the Department are mainly focused on general computer graphics algorithms, rendering, animation in 3D space, modern methods of man-computer interaction in virtual 3D space, image processing, digital signal processing, and applications of computer graphics. The main research topics are the following:

- realistic rendering of complex scenes and volume rendering
- animation of articulated structures: kinematics and dynamics,
- computer graphics algorithms using DSP a FPGA,
- multispectral image compression ,
- human body modelling: reconstruction from VH data sets
- parallel rendering,
- geographical information systems,
- artistic modelling and rendering: patterns, fractals, unrealistic rendering

The majority of courses consist of lectures supplemented with projects and laboratory sessions. The knowledge that students gain during the lectures is further developed in laboratory sessions and practised in individually assigned projects and team projects. Most assignments are computer independent. In case of complex tasks, which need specialized equipment, the necessary equipment, such as high performance Silicon Graphics graphic stations and specialized peripheries, is available.

Staff

Head of the Department

Zemčík Pavel, Doc. Dr. Ing.

Deputy Head of the Department

Černocký Jan, Dr. Ing.

Professors

Heřmanský Hynek, Prof., Dr.Eng.

Serba Ivo, Prof. Ing., CSc.

Associate Professors

Zemčík Pavel, Doc. Dr. Ing.

Lecturers

Černocký Jan, Dr. Ing.
 Dobšík Martin, Ing.
 Kršek Přemysl, Ing., Ph.D.
 Tišnovský Pavel, Ing.

Technical Staff

Otáhalová Sylva

PhD. Students

Abu Kteish Ibrahim, Ing.
 Burget Lukáš, Ing.
 Čapek Daniel, Ing.
 Grézl František, Ing.
 Herout Adam, Ing.
 Jenderka Petr, Ing.
 Karafiát Martin, Ing.
 Křejský Marek, Ing.
 Motlíček Petr, Ing.
 Pečiva Jan, Ing.
 Potůček Igor, Ing.
 Schwarz Petr, Ing.
 Sumeč Stanislav, Ing.
 Vícha Tomáš, 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 workstations.
- Software called SPEL - Speech Processing Electronic Library specialized in speech signal processing.

Tuition

Abbr	Course	Sem	Cr.	Hours	Lecturer
CZR	Digital Speech Processing	W	6	26-3-0-24-12	Heřmanský Hynek, Prof., Dr.Eng.
MMD	Modern methods of 3D scene rendering	W	0	39-0-0-0-0	Zemčík Pavel, Doc. Dr. Ing.
MMD	Modern methods of 3D scene rendering	S	0	39-0-0-0-0	Zemčík Pavel, Doc. Dr. Ing.
MUM	Multimedia	S	6	26-0-0-13-13	Zemčík Pavel, Doc. Dr. Ing.
PGD	Computer Graphics	W	0	39-0-0-0-0	Serba Ivo, Prof. Ing., CSc.
POG	Computer Graphics	S	7	39-0-20-0-20	Fědor Martin, Ing.
SCS	Man-Machine Interface	W	6	26-0-0-18-21	Zemčík Pavel, Doc. Dr. Ing.
ZPG	Fundamentals of Computer Graphics	W	6	39-0-0-26-0	Kršek Přemysl, Ing., Ph.D.

Research Projects

Computer graphics algorithms with FPGA support, GAČR, GA102/02/0507, 2002-2003

Investigators: Zemčík Pavel

Data driven and anthropic coding and recognition of speech, GAČR, GA102/02/D108, 2002-2005

Investigators: Černocký Jan

Voice technologies for support of information society, GAČR, GA102/02/0124, 2002-2004

Investigators: Burget Lukáš, Černocký Jan, Grézl František, Karafiát Martin, Motlíček Petr, Schwarz Petr

IMPIT – International students' mobility, MŠMT, MMI 20059, 2002

Investigators: Abu Kteish Ibrahim, Drahanský Martin, Kašpárek Tomáš, Křena Bohuslav, Pečiva Jan, Zemčík Pavel

Advanced Techniques for Acoustic Modelling in Speech Recognition, MŠMT, MMI 2056, 2002

Investigators: Černocký Jan, Jain Pratibha, Matějka Pavel, Schwarz Petr

Multi Modal Meeting Manager, EU-HLT, IST-2001-34485, 2002-2005

Investigators: Černocký Jan, Heřmanský Hynek, Zemčík Pavel

Development in area of creating FEM models of human tissues for biomechanics application, GAČR, GA201/01/D141, 2001-2004

Investigators: Kršek Přemysl

Research of Information and Control Systems, CEZ MŠMT, MSM 262200012, 1999-2003

Investigators: Bejček Ludvík, Borecká Marcela, Bradáč Zdeněk, Cvrček Daniel, Čejka Miloslav, Čejka Rudolf, Češka Milan, Drábek Vladimír, Dvořák Václav, Eysselt Miloš, Fědor Martin, Fučík Otto, Gaďorek Petr, Hanáček Petr, Hoder Karel, Holec Radovan, Honec Jozef, Honzík Jan M., Hruška Tomáš, Janoušek Vladimír, Jura Pavel, Kolář Dušan, Kotásek Zdeněk, Kovár Martin, Kreslík František, Kreslíková Jitka, Kunovský Jiří, Lampa Petr, Linhart Miroslav, Macho Tomáš, Malec Zdeněk, Meduna Alexander, Michal Bohumil, Peringer Petr, Rábová Zdeňka, Richter Miroslav, Serba Ivo, Schwarz Josef, Šolc František, Švéda Miroslav, Valenta Pavel, Vojnar Tomáš, Zbořil František, Zemčík Pavel, Zendulka Jaroslav, Zezulka František

Centre of Applied Cybernetics CAK, participation in a part of project dedicated to image processing (the Centre was established by the MŠMT)

Investigators: Pavel Zemčík

Co-operation

Co-operation in the Czech Republic

- Faculty of Informatics MU Brno, Doc. Karel Pala, Dr. Ivan Kopeček, Dr. Tomáš Staudek – co-operation in speech processing and computer graphics
- VŠB-TU, Ostrava, Faculty of Electronics and Informatics, Dr. Arnošt Šarman – annual series of lectures given by the staff and PhD. students of ÚPGM, VŠB-TU – focus on computer graphics
- Centre for Machine Perception, FELK ČVUT Praha, Dr. Jiří Matas – co-operation on image processing related to transport
- ÚTIA Praha, Dr. Jaroslav Kadlec, Ing. Jan Schier - co-operation in the field of algorithm implementation for image processing in FPGA

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 PhD. students
- University of Surrey, Guildford, UK, Centre for Vision, Speech, and Signal Processing, Prof. Josef Kittler, Dr. William Christmas – image processing, exchange of PhD. students
- 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 PhD. students
- Lappeenranta University of Technology, Lappeenranta, Finland, Prof. Heikki Kälviäinen, Prof. Jan Voráček – image processing, exchange of students, and MSc. Study in Finland within the framework of IMPIT Project (International Master's Programme in Information Technology)
- University of Joensuu, Joensuu, Finland, Department of Computer Science, Prof. Jussi Parkkinen, Dr. Markku Hauta-Kasari – multispectral colour image processing, exchange of students
- Technische Universität Wien, Institut für Computergrafik, Thomas Theußl – Annual international students' seminar CESGC (Central European Seminar on Computer Graphics)
- Oregon Health and Science University, Oregon Graduate Institute, Oregon, USA, Prof. Misha Pavel – speech processing, robust detection of phonemes, exchange of PhD. students
- ESIEE Paris, Paris, France, Prof. Genevieve Baudoin – speech processing, very low bit-rate speech coding, exchange of PhD. students
- Department of computer graphics and image processing, Faculty of Mathematics, Physics and Informatics, Comenius University, Bratislava, Slovak Republic, Dr. Andrej Ferko – Annual international students' seminar CESGC (Central European Seminar on Computer Graphics)

Visitors to the Department

- Prof. Genevieve Baudoin, director for research ESIEE Paris, Ecole Supérieure d'Ingenieurs en Electrotechnique et Electronique, France, 7 days

- Pratibha Jain, doctoral student OGI/OHSU, OGI School of Science & Engineering, Oregon Health & Science University, Portland, OR, USA, 1 month
- Dr. Jean Hennebert, Director - VP Technology, Ubicall, Belgium, 2 days
- Dr. Alan Chalmers, University of Bristol, UK, 3 days
- Dr. Collin Dalton, University of Bristol, UK, 3 days
- Dr. Michael Fridrich, University of Helsinki, Finland, 3 days

Visits of Staff Members to Foreign Institutions

- Burget Lukáš, Ing., Oregon Graduate Institute of Science and Technology, Portland, Oregon, US, 4 months
- Černocký Jan, Dr. Ing., Technische Fachhochschule Wiesbaden, Wiesbaden, DE, 5 days
- Černocký Jan, Dr. Ing., Ecole Supérieure d'Ingenieurs en Electronique et Electrotechnique, Noisy-le-Grand, FR, 6 days
- Černocký Jan, Dr. Ing., Institut Dalle Molle d'Intelligence Artificielle Perceptive – IDIAP, Martigny, CH, 5 days
- Grézl František, Ing., Oregon Graduate Institute of Science and Technology, Portland, Oregon, US, 16 months
- Motlíček Petr, Ing., Oregon Graduate Institute of Science and Technology, Portland, Oregon, US, 9 months
- Pečiva Jan, Ing., University of Bristol, Department of Computer Science, Merchant Ventures Building, Bristol, GB, 2 months
- Schwarz Petr, Ing., Oregon Graduate Institute of Science and Technology, Portland, Oregon, US, 10 months
- Zemčík Pavel, Doc. Dr. Ing., Technical Educational Institute, Chania, Crete, GR, 10 days
- Zemčík Pavel, Doc. Dr. Ing., Institut Dalle Molle d'Intelligence Artificielle Perceptive - IDIAP, Martigny, CH, 5 days
- Zemčík Pavel, Doc. Dr. Ing., University of Utrecht, NL, 4 days
- Zemčík Pavel, Doc. Dr. Ing., University of Joensuu, Joensuu, FI, 7 days

Membership in Organizations and Societies

- Černocký Jan, Dr. Ing.,
 - IEEE (Secretary of the Czech Section)
 - ISCA (International speech communication association).

- Dobšík Martin, Ing.,
 - ACM, SIGGRAPH
 - Czech and Slovak Simulation Society (CSSS)
- Kršek Přemysl, Dr. Ing.
 - ACM
- Pavel Zemčík, Doc. Dr. Ing.,
 - ACM, SIGHCI
 - IEEE

Publications

Journals:

Brázdil Milan, Dobšík Martin, Pažourková Marta, Krupa Petr, Rektor Ivan: The Importance of Functional Magnetic Resonance for Evaluation of Cognitive Processes in the Human Brain, In: Česká a slovenská neurologie a neurochirurgie, 2002, No. 5, CZ, p. 10, ISSN 1210-7859

Brázdil Milan, Kuba Robert, Daniel Pavel, Sochůrková Daniela, Dobšík Martin, Rektor Ivan: Covert Vision Sign, In: European Journal of Neurology, vol. 9, No. 3, GB, pp. 316-319, ISSN 1351-5101

Burget Lukáš, Motlíček Petr, Grézl František, Jain Pratibha: Distributed speech recognition, In: Radioengineering, 2002, No. 4, CZ, pp. 12-16, ISSN 1210-2512

Herout Adam, Tišnovský Pavel: Vector field visualisation using particle systems, In: Elektrovue - www.elektrovue.cz, 2002, No. 20, Brno, CZ, pp. 1-15, ISSN 1213-1539

Conferences:

Baudoin Genevieve, Capman Francois, Černocký Jan, El Chami Fadi, Charbit Maurice, Chollet Gerard, Petrovska-Delacretaz Dijana: Advances in very low bit-rate speech coding using recognition and synthesis techniques, In: Proc. 5th International Conference Text, Speech and Dialogue, TSD2002, Berlin, DE, Springer, 2002, pp. 269-276, ISBN 3-540-44129-8

Burget Lukáš, Dupont Stephane, Garudadri Harinath, Grézl František, Heřmanský Hynek, Jain Pratibha, Kajarekar Sachin, Morgan Nelson: QUALCOMM-ICSI-OGI Features for ASR, In: Proc. 7th International Conference on Spoken Language Processing, Denver, US, ISCA, 2002, p. 4, ISBN 1-876346-42-6

Černocký Jan: Units for automatic language independent speech processing, In: Proc. LREC 2002 - workshop on Portability issues in human language technologies, Las Palmas, ES, ELRA, 2002, pp. 7-13

Dedouch Karel, Vampola Tomáš, Švec Jan, Kršek Přemysl, Havlík Radan: Acoustic modal analysis of male vocal tract for Czech vowels, In: Interaction and feedback 2002, Praha, CZ, AV ČR, 2002, pp. 13-20, ISBN 80-85918-75-7

- Florian Zdeněk, Kotek Vladimír, Wendsche Petr, Kršek Přemysl:** Stress and strain analysis of degenerated spine element, In: Inženýrská mechanika 2001, Praha, CZ, AV ČR, 2002, pp. 49-50, ISBN 80-214-2109-6
- Florian Zdeněk, Kotek Vladimír, Wendsche Petr, Kršek Přemysl:** Mechanical properties of osteoporotic vertebra, In: Skelet 2002, Praha, CZ, ČVUT, 2002, p.9, ISBN 80-86-317-19-6
- Florian Zdeněk, Kotek Vladimír, Wendsche Petr, Kršek Přemysl:** Stress and strain analysis of degenerated spine element, In: Biomechanics of man 2002, Praha, CZ, UK FTVS, 2002, pp. 189-192, ISBN 80-86-317-23-4
- Fučík Otto, Zemčík Pavel:** Hardware Accelerated Imaging Algorithms, In: AUTOS 2002 Automation of systems, Praha, CZ, ČVUT, 2002, pp. 165-171, ISBN 1213-8134
- Grézl František, Burget Lukáš, Jain Pratibha, Černocký Jan:** Improving TRAPS features using LDA, In: Proc. 12th International scientific conference Radioelektronika 2002, Bratislava, SK, STUBA, 2002, p. 4, ISBN 80-227-1700-2
- Grézl František:** Qualifiers Based on TRAPS in Speech Recognition Systems, In: Proceedings of 8th Conference STUDENT EEICT 2002, Brno, CZ, FEEC BUT, 2002, p. 4, ISBN 80-214-2116-9
- Heckel Martin, Zemčík Pavel:** Image Processing and Content Based Image Retrieval with Hardware Acceleration, In: East-West-Vision 2002 (EWV'02) International Workshop on Computer Vision, Computer Graphics, New Media, Vienna, AT, 2002, pp. 217-218, ISBN 3-85403-163-7
- Herout Adam, Tišnovský Pavel:** Vector Field Calculations on a Special Hardware Architecture, In: East-West-Vision 2002 Proceedings, Graz, AT, TUV, 2002, pp. 263-264, ISBN 3-85403-163
- Karafiát Martin, Černocký Jan:** Context dependent Hidden Markov models in recognition of Czech, In: Proc. 12th International scientific conference Radioelektronika 2002, Bratislava, SK, STUBA, 2002, p. 4, ISBN 80-227-1700-2
- Kršek Přemysl:** Automatic creating of tetrahedral fem models of human tissues from segmented CT/MR data, In: EMBEC02, Vienna, AT, TUV, 2002, pp. 232-233, ISBN 3-90-1351-62-0
- Kršek Přemysl:** Automatic creation of MKP models of human tissues - practice, In: Skelet 2000, Praha, CZ, ČVUT, 2002, pp. 34-35, ISBN 80-86317-19-6
- Kršek Přemysl:** Quality of MKP models of human tissues automatically created from CT/MR data, In: Inženýrská mechanika 2001, Praha, CZ, AV ČR, 2002, pp. 141-142, ISBN 80-214-2109-6
- Kršek Přemysl:** Creation of complex MKP models of human tissues using Boolean operations, In: Biomechanics of man 2002, Praha, CZ, UK FTVS, 2002, pp. 24-26, ISBN 80-86-317-23-4
- Marušinec Jaromír:** Bio-entity Simulations, In: Proceedings of the 36th International Conference Modelling and Simulation of Systems - MOSIS 2002, Ostrava, CZ, MARQ, 2002, p. 6, ISBN 80-85988-71-2

Matějka Pavel, Černocký Jan: Gaussianization of Data in Speech Recognition, In: Proc. 12th International scientific conference Radioelektronika 2002, Bratislava, SK, STUBA, 2002, p. 4, ISBN 80-227-1700-2

Matějka Pavel, Schwarz Petr, Karafiát Martin, Černocký Jan: Some like it Gaussian, In: Proc. 5th International Conference Text, Speech and Dialogue, TSD2002, Berlin, DE, Springer, 2002, pp. 321-324, ISBN 3-540-44129-8

Motlíček Petr, Burget Lukáš: Noise estimation for robust speech recognition, In: 5th International Conference, TSD 2002 Brno, Czech Republic, September 2002 Proceedings, Berlin, DE, Springer, 2002, pp. 229-236, ISBN 3-540-44129-8

Motlíček Petr, Burget Lukáš: Noise estimation for efficient speech enhancement and robust speech recognition, In: Proc. 7th International Conference on Spoken Language Processing, Denver, US, ISCA, 2002, pp. 1033-1036, ISBN 1-876346-42-6

Motlíček Petr, Burget Lukáš: Application of Mel-scale Filter Bank for Noise Estimation in Speech Processing, In: 12th International Czech-Slovak Scientific conference Radioelektronika 2002, Bratislava, SK, STUBA, 2002, p. 4, ISBN 80-227-1700-2

Motlíček Petr: Noise Estimation for Spectral Subtraction in Speech Processing, In: Proceedings of 8th Conference STUDENT EEICT 2002, Brno, CZ, FEEC BUT, 2002, p. 4, ISBN 80-214-2116-9

Schwarz Petr, Černocký Jan: Keyword detection in Czech fluent speech, In: Proc. 12th International scientific conference Radioelektronika 2002, Bratislava, SK, STUBA, 2002, p. 4, ISBN 80-227-1700-2

Schwarz Petr: Modified Viterbi Algorithm for keyword detection, In: Proceedings of 8th Conference STUDENT EEICT 2002, Brno, CZ, FEEC BUT, 2002, p. 4, ISBN 80-214-2116-9

Tišnovský Pavel, Herout Adam: Adaptive Algorithm for Vector Field Interpolation Based on Octree Structure, In: Spring Conference on Computer Graphics Proceedings 2002, Budmerice, SK, STUBA, 2002, pp. 145-150, ISBN 80-223-1730-6

Vícha Tomáš: Multimedia application for teaching visual art to handicapped children, In: 6th Central European Seminar on Computer Graphics, Bratislava, SK, 2002, p. 6

Zemčík Pavel: Hardware Acceleration of Graphics and Imaging Algorithms using FPGAs, In: Proceedings of SCCG, Budmerice, SK, STUBA, 2002, p. 8

Research Reports:

Garudadri Harinath, Heřmanský Hynek, Morgan Nelson, Benitez Carmen, Burget Lukáš, Kajarekar Sachin, Grézl František, Jain Pratibha, Motlíček Petr: Distributed Voice Recognition System Utilizing Multistream Network Feature Processing, San Diego, US, Qualcomm, 2002, p. 40

Motlíček Petr: Feature Extraction in Speech Coding and Recognition, Portland, US, OGI, 2002, pp. 1-46

DEPARTMENT OF COMPUTER SYSTEMS

Department of Computer Systems provides tuition in the MSc. specialization **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 specialized interfaces, including interfaces to the Internet. Besides, the Department is also in charge of teaching a number of courses in the Bachelor's study programme **Information Technology**.

Research activities of the Department are focused on architecture of HW/SW of embedded systems, parallel performance prediction and tuning, specification and design of computer-based 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:

- formal specification and design of computer-based systems,
- application-specific architectures: high-performance embedded systems, multiprocessor systems on a chip (MPSoC) and re-configurable systems ,
- performance prediction and tuning of parallel applications (neural networks, large systems of linear equations, signal processing algorithms),
- evolvable digital architectures,
- formal approaches to digital circuit diagnostics,
- applied evolutionary algorithms, and
- diagnostics, testability and safety.

The lectures in most of the courses are supplemented with projects of laboratory sessions, where students acquire useful experience and skills with the latest software packages and hardware units (workstations and workstation clusters, multiprocessor systems, workstation clusters, RT OS, FPGA design systems and the like), learn basics of teamwork and project management. For the most demanding projects there is an access to the **Supercomputing Centre of BUT**.

Staff

Head of Department

Dvořák Václav, Prof. Ing., DrSc.

Deputy Head of Department

Kotásek Zdeněk, Doc. Ing., CSc.

Professors

Dvořák Václav, Prof. Ing., DrSc.

Švéda Miroslav, Prof. Ing., CSc.

Associated Professors

Drábek Vladimír, Doc. Ing., CSc.
Kotásek Zdeněk, Doc. Ing., CSc.
Linhart Miroslav, Doc. Ing., CSc.

Lecturers

Eysselt Miloš, Ing., CSc.
Fučík Otto, Dr. Ing.
Růžička Richard, Ing., Ph.D.
Sekanina Lukáš, Ing., Ph.D.
Schwarz Josef, Ing., CSc.

PhD. Students

Bureš František, Ing.
Crha Luděk, Ing.
Kutálek Vladimír, Ing.
Mika Daniel, Ing.
Ráb Jaroslav, Ing.
Ryšavý Ondřej, Ing.
Sllame Azeddien M., Ing.
Staroba Jiří, Ing.
Strach Michal, Ing.
Strnadel Josef, Ing.
Ščuglík František, Ing.
Tupec Pavel, Ing.
Urbiš Hynek, Ing.

Laboratory Equipment

Laboratory of Embedded Systems

6 work sites equipped with FUJITSU DevKit16 for the development of advanced embedded applications including special peripherals in FPGA, and use of modern design systems “Processor Expert“, UNIS.

8 work sites equipped with development kits HC11 EVBU for the development of simple embedded applications with the use of the most widely spread MCU Motorola.
1 work site for developing DSP applications with DSP (Motorola).

Computer Peripheral Laboratory

The bench for tuition support and development of PC fieldbuses – a special adapter (developed at the FIT), PCI Spartan fieldbus development kit with FPGA, Agilent 32-channel logic analyser

Input peripheral devices bench – a keyboard and its controller (a special-purpose set-up for demonstration), tablet Genius NewSketch, desktop scanner HP 5300C.

Output peripheral devices bench – ink printer HP DesignJet 488CA with HPGL a PCL graphic languages, Roland x/y plotter with HPGL language.

Digital computer/analog environment interface – Cards with Advantech PCI 1710 A/D converters, Advantech switching network, digital oscilloscope Agilent 54622A, and MS 9160 – function generator and counter.

Digital interfaces bench - cards for PC / devices with RS-232, RS-485, RS-422, GPIB.

External memory bench - interface and IDE a SCSI, SCSI-2 discs.

The bench for development teaching kits – memory programmer, programmable logic and processors Elneec LabProg 48LV, soldering station, measuring instruments and power sources.

Tuition

Abbr.	Course	Sem	Cr	Hours	Lecturer
EVA	Applied evolution algorithms	S	6	39-0-0-8-18	Schwarz Josef, Ing., CSc.
AMC	Applied microcomputers	S	6	26-0-26-0-13	Schwarz Josef, Ing., CSc.
ARP	Computer architecture	W	6	39-18-0-8-0	Dvořák Václav, Prof. Ing., DrSc.
CIO	Digital and impulse circuits	W	6	26-13-0-13-13	Schwarz Josef, Ing., CSc.
CZS	Digital signal processing	W	6	39-0-0-10-16	Fučík Otto, Dr. Ing.
CZS	Digital signal processing	S	6	39-0-0-10-16	Fučík Otto, Dr. Ing.
DIA	Diagnostics and safe systems	W	6	39-0-12-0-14	Drábek Vladimír, Doc. Ing., CSc.
SSD	Formal specification of computer-based systems	S	0	39-0-0-0-0	Švéda Miroslav, Prof. Ing., CSc.
GMP	Graphical and multimedia processors	W	6	39-0-0-13-13	Drábek Vladimír, Doc. Ing., CSc.
KPA	Communication in computer applications	W	6	39-0-0-12-14	Švéda Miroslav, Prof. Ing., CSc.
LOS	Logical systems	W	5	39-18-0-0-8	Eysselt Miloš, Ing., CSc.
LOS	Logical systems	S	5	39-16-6-0-4	Eysselt Miloš, Ing., CSc.
NCS	Moder design of digital systems	S	6	39-0-0-10-16	Fučík Otto, Dr. Ing.
PDD	Parallel and distributed programming	W	0	39-0-0-0-0	Dvořák Václav, Prof. Ing., DrSc.
PZ1	Peripheral devices 1	S	6	39-0-12-0-14	Kotásek Zdeněk, Doc. Ing., CSc.
PZ2	Peripheral devices 2	W	6	39-0-12-0-14	Kotásek Zdeněk, Doc. Ing., CSc.
PTP	PCs, technical maintenance	S	6	26-0-0-39-0	Kotásek Zdeněk, Doc. Ing., CSc.
PSI	Computer networks and communication protocols	W	6	39-0-0-12-14	Švéda Miroslav, Prof. Ing., CSc.
PPP	Practical parallel programming	S	6	26-0-0-0-26	Dvořák Václav, Prof. Ing., DrSc.
PTD	Principles of testable circuits synthesis	W	0	39-0-0-0-0	Kotásek Zdeněk, Doc. Ing., CSc.

PDT	Data transmission and computer networks	S	6	39-8-0-10-8	Švéda Miroslav, Prof. Ing., CSc.
SVD	Specification of embedded systems	W	0	39-0-0-0-0	Švéda Miroslav, Prof. Ing., CSc.
SZZ	Final State Exam	S	0	0-0-0-0-0	Eysselt Miloš, Ing., CSc.
SOP	Fault-tolerant systems	S	6	39-0-0-13-13	Drábek Vladimír, Doc. Ing., CSc.
VPO	Computer architecture	S	6	39-10-6-0-6	Drábek Vladimír, Doc. Ing., CSc.
ZPX	Professional training abroad	W	5	0-0-0-0-0	Drábek Vladimír, Doc. Ing., CSc.

Research Projects

Efficient methods of solving large sets of linear algebraic equations, FRVŠ MŠMT, FR1956/2002/G1, 2002

Investigators: Staroba Jiří, Dvořák Václav

Application of Evolution Approaches for Digital Circuits Testability Enhancement, FRVŠ MŠMT, FR1754/2002/G1, 2002

Investigators: Kotásek Zdeněk, Strnadel Josef

InterPRISe – Interregional Co-operation for Promoting Regional Innovation Strategies in Europe, EU - Phare, 2002

Investigators: Češka Milan, Drábek Vladimír, Dvořák Václav, Eysselt Miloš, Honzík Jan M., Hruška Tomáš, Kolář Dušan, Kotásek Zdeněk, Kreslíková Jitka, Kunovský Jiří, Schwarz Josef, Švéda Miroslav, Zbořil František, Zendulka Jaroslav

Parallel System Performance Prediction and Tuning, GAČR, GA102/02/0503, 2002-2004

Investigators: Dvořák Václav, Čejka Rudolf, Kutálek Vladimír, Očenášek Jiří, Schwarz Josef, Staroba Jiří

Embedded Control Systems and their Intercommunication, GAČR, GA102/02/1032, 2002-2004

Investigators: Bílek Jan, Kapoun Vladimír, Srovnal Vilém, Švéda Miroslav, Vrba Radimír, Zezulka František

Formal Approaches in Digital Design Diagnostics – Testable Design Verification, GAČR, GA102/01/1531, 2001-2003

Investigators: Drábek Vladimír, Kotásek Zdeněk, Růžička Richard, Sekanina Lukáš, Strnadel Josef, Zbořil František

Research of Information and Control Systems, CEZ MŠMT, MSM 262200012, 1999-2003

Investigators: Bejček Ludvík, Borecká Marcela, Bradáč Zdeněk, Cvrček Daniel, Čejka Miloslav, Čejka Rudolf, Češka Milan, Drábek Vladimír, Dvořák Václav, Eysselt Miloš, Fědor Martin, Fučík Otto, Gad'orek Petr, Hanáček Petr, Hoder Karel, Holec Radovan, Honec Jozef, Honzík Jan M., Hruška Tomáš, Janoušek Vladimír, Jura Pavel, Kolář Dušan, Kotásek Zdeněk, Kovár Martin, Kreslík František, Kreslíková Jitka, Kunovský Jiří, Lampa Petr, Linhart Miroslav, Macho Tomáš, Malec Zdeněk, Meduna Alexander, Michal Bohumil, Peringer Petr,

Rábová Zdeňka, Richter Miroslav, Serba Ivo, Schwarz Josef, Šolc František, Švéda Miroslav, Valenta Pavel, Vojnar Tomáš, Zbořil František, Zemčík Pavel, Zendulka Jaroslav, Zezulka František

Co-operation

Co-operation in the Czech Republic

- Camea, s.r.o., Brno
- UNIS, s.r.o., Brno
- ASICentrum, Praha
- Institute of Informatics and Automation, AV ČR
- Department of Informatics, FEI. Technical University of Mining and Metallurgy Ostrava
- Computer Department. FEL, Czech Technical University, Prague
- Department of Electrical Measurement, Technical University of Mining and Metallurgy Ostrava
- Faculty of Mechatronics, Liberec University of Technology
- Faculty of Applied Sciences, University of West Bohemia, Plzeň

International Co-operation

- Institute of Informatics, Slovak Academy of Sciences, SR
- Technical University in Tallin, Estonia
- Department of Informatics, University of Oslo, Norway
- Pennsylvania State University, The Behrend College, Erie, USA
- Cell Matrix Corp., USA
- Norwegian University of Science and Technology, Trondheim, Norway
- Politecnico di Torino - Dip. Automatica e Informatica, Italy
- Universidade de Aveiro, Portugal

Visits of the Staff in Other Institutions

- Drábek Vladimír, Doc. Ing., CSc., EUROMICRO Symposium on Digital System Design: Architecture, Methods and Tools, Dortmund, DE, 5 days

- Drábek Vladimír, Doc. Ing., CSc., 8th Baltic Electronics Conference, Tallinn, EE, 6 days
- Dvořák Václav, Prof. Ing., DrSc., International Conference on Parallel and Distributed Processing Techniques and Applications, Las Vegas, Nevada, US, 10 days
- Dvořák Václav, Prof. Ing., DrSc., Lunds Universitet, Lund, SE, 6 days
- Eysselt Miloš, Ing., CSc., Institut für Strukturpolitik und Wirtschaftsförderung, Halle-Leipzig e.V., Halle/S., DE, 4 days
- Kotásek Zdeněk, Doc. Ing., CSc., Universität Dortmund, Universita v Dortmundu, DE, 5 days
- Kotásek Zdeněk, Doc. Ing., CSc., Talinna Tehnikaülikool, University of Tallin, EE, 6 days
- Očenášek Jiří, Ing., Technical University in Košice, TU Kosice, SK, 5 days
- Sekanina Lukáš, Ing., Ph.D., European Network of Excellence in Evolutionary Computing, Kinsale, Irsko (hotel Trident), IE, 7 days
- Sekanina Lukáš, Ing., Ph.D., Universidade de Granada, Granada, ES, 7 days
- Staroba Jiří, Ing., Johannes Kepler University Linz, Johannes Kepler University, Altenbergerstr. 69, 4040 Linz, AT, 5 days
- Staroba Jiří, Ing., Lunds Universitet, Lund, SE, 6 days
- Švéda Miroslav, Prof. Ing., CSc., Lunds Universitet, Lund, SE, 6 days
- Švéda Miroslav, Prof. Ing., CSc., IEEE Computer Society Press, Orlando, Florida, US, 13 days

Membership in Organizations and Societies

- Drábek Vladimír, Doc. Ing., CSc.,
 - Czech Society for Cybernetics and Informatics
 - Czech Electrical Engineering Society
 - Czech and Slovak Simulation Society (CSSS)
 - EvoNet - The European Network of Excellence in Evolutionary Computing
- Dvořák Václav, Prof. Ing., DrSc.,
 - IEEE - Computer Society, since 1991
 - Editorial Board JUCS, Journal of Universal Computer Science, since 1994
 - Editorial Board JEE - Journal of Electrical Engineering (Bratislava, Slovakia), since 1996

- Eysselt Miloš, Ing., CSc.,
 - IGIP (Internationale Gesellschaft für Ingenieurpädagogik / International Society for Engineering Education, A, Klagenfurt).
- Fučík Otto, Dr. Ing.,
 - The Institute of Electrical and Electronic Engineers (IEEE)
- Růžička Richard, Ing., Ph.D.,
 - EvoNet - The European Network of Excellence in Evolutionary Computing
- Sekanina Lukáš, Ing., Ph.D.,
 - EvoNet - The European Network of Excellence in Evolutionary Computing
- Schwarz Josef, Ing., CSc.,
 - Czech and Slovak Simulation Society (CSSS)
 - EvoNet - The European Network of Excellence in Evolutionary Computing
- Švéda Miroslav, Prof. Ing., CSc.,
 - IEEE Computer Society
 - IEEE Technical Committee on Engineering of Computer-Based Systems (ECBS)
 - IFIP WG10.1

Publications:

Journals:

Kapoun Vladimír, Švéda Miroslav: Management systems and their organization, In: ElectronicsLetters.com, 2002, No. 12, Brno, CZ, p. 3, ISSN 1213-161X

Sekanina Lukáš, Drábek Vladimír: Soft-hardware, In: Vesmír, vol. 81, č. 7, CZ, p. 393-395, ISSN 0042-4544

Conferences:

Bureš František: DocBook and technical documentation development, In: Proceedings of 8th Conference STUDENT EEICT 2002, Brno, CZ, FEEC BUT, 2002, pp. 421-425, ISBN 80-214-2116-9

Drábek Vladimír, Sekanina Lukáš: Basic Principles of Bio-Inspired Approaches to Fault Tolerance: Tutorial, In: Design for Test of Systems on Chip: Digital Test, Tallinn, EE, TTU, 2002, pp. 48, ISBN 0000-00-000-0

Dvořák Václav, Staroba Jiří: Design Space Exploration of Parallel Embedded Applications Based on Performance-Oriented Specifications, In: Proceedings of the Joint Workshop on

Formal Specifications of Computer-Based Systems, Stirling, GB, US, 2002, pp. 71-75, ISBN 1-85769-169-5

Dvořák Václav, Staroba Jiří: Performance Prediction Model of Bus-Based Shared Memory Architectures, In: Proceedings of 36th International Conference MOSIS'02 Modelling and Simulation of Systems, Ostrava, CZ, MARQ, 2002, pp. 273-280, ISBN 80-85988-71-2

Dvořák Václav: Executable System-Level Specifications of HW/SW Architecture for Embedded Multiprocessor Systems, In: Proceedings of the Joint Workshop on Formal Specifications of Computer-Based Systems, 2002, Stirling, GB, US, 2002, pp. 65-70, ISBN 1-85769-169-5

Dvořák Václav: Simulation and Prototyping in Teaching Parallel Architectures, Algorithms, and Programming Models, In: Proceedings of the International Conference on Parallel and Distributed Processing Techniques and Applications, Las Vegas, Nevada, US, CSREA, 2002, pp. 934-940, ISBN 1-892512-88-2

Fučík Otto, Zemčík Pavel: Hardware Accelerated Imaging Algorithms, In: AUTOS 2002 Automatizace systémů, Praha, CZ, ČVUT, 2002, pp. 165-171, ISBN 1213-8134

Kučera Pavel, Zezulka František, Švéda Miroslav, Vrba Radimír: Executable specifications for Process Automation and Microelectronics, In: IEEE TC-ECBS and IFIP WG10.1 Joint Workshop on Formal Specifications of Computer-Based Systems, Lund, SE, US, 2002, pp. 91-98, ISBN 1-85769-169-5

Kutálek Vladimír, Dvořák Václav: Prototyping Parallel Applications Based on Divide and Conquer Strategy, In: Proceedings of 36th International Conference MOSIS '02 Modelling and Simulation of Systems, Ostrava, CZ, MARQ, 2002, pp. 313-320, ISBN 80-85988-71-2

Kutálek Vladimír, Dvořák Václav: Simulation and Prototyping Multiprocessor SoC with Hybrid Pipeline/Farm Architecture, In: Proceedings of IEEE Design and Diagnostics of Electronic Circuits and System Workshop, Brno, CZ, FIT BUT, 2002, pp. 296-299, ISBN 80-214-2094-4

Laumanns Marco, Očenášek Jiří: Bayesian Optimization Algorithms for Multi-Objective Optimization, In: Parallel Problem Solving from Nature - PPSN VII, Granada, ES, Springer, 2002, pp. 298-307, ISBN 3-540-444139-5

Mika Daniel, Kotásek Zdeněk, Strnadel Josef: Test Controller Design Based on VHDL Source File Analysis, In: Proceedings of The Fifth International Scientific Conference Electronic Computers and Informatics 2002, Letná 42, 040 01 TU Košice, SK, 2002, pp. 135-141, ISBN 80-7099-879-2

Očenášek Jiří, Schwarz Josef: Development system DEBOA for rapid prototyping of evolutionary applications, In: Proceedings of International Conference MOSIS '02, Ostrava, CZ, MARQ, 2002, pp. 169-176, ISBN 80-85988-71-2

Očenášek Jiří, Schwarz Josef: Estimation Distribution Algorithm for mixed continuous-discrete optimization problems, In: Proceedings of the 2nd Euro-International Symposium on Computational Intelligence, Kosice, SK, IOS, 2002, pp. 227-232, ISBN 1-58603-256-9

Růžička Richard: The Formal Approach to the RTL Test Application Problem Using Petri Nets, In: Proceedings of IEEE Design and Diagnostics of Electronic Circuits and Systems 2002, Brno, CZ, FIT VUT, 2002, pp. 78-86, ISBN 80-214-2094-4

Růžička Richard: VHDL Circuit Description Transparency Analysis, In: Proceedings of the Fifth International Scientific Conference Electronic Computers and Informatics 2002, Košice, SK, FEI TU v Košiciach, 2002, pp. 194-199, ISBN 80-7099-879-2

Ryšavý Ondřej: XML constraint specification language, In: Proceedings of the 9th Electronic Devices and Systems Conference EDS'02, Brno, CZ, BUT v Brně, 2002, p. 4, ISBN 80-214-2180-0

Sekanina Lukáš, Drábek Vladimír: A survey of bioinspired methods for design of fault tolerant reconfigurable architectures, In: Proc. of the 8th Biennial Baltic Electronics Conference, Tallinn, EE, TTU, 2002, pp. 355-358, ISBN 9985-59-292-1

Sekanina Lukáš, Drábek Vladimír: Automatic Design of Image Operators Using Evolvable Hardware, In: Proc. of 5th IEEE Design and Diagnostics of Electronic Circuits and Systems Workshop, Brno, CZ, VUT v Brně, 2002, pp. 132-139, ISBN 80-214-2094-4

Sekanina Lukáš, Torresen Jim: Detection of Norwegian Speed Limit Signs, In: Proc. of the 16th European Simulation Multiconference, Delft, NL, SCS, 2002, pp. 337-340, ISBN 90-77039-07-4

Sekanina Lukáš: Automata of Evolvable Computational Machines, In: Proc. of 8th conference Student EEICT, Brno, CZ, BUT v Brně, 2002, pp. 491-495, ISBN 80-214-2116-9

Sekanina Lukáš: Evolution of digital circuits operating as image filters in dynamically changing environment, In: Mendel 2002 - 8th International Conference on Soft Computing, Brno, CZ, VUT v Brně, 2002, pp. 33-38, ISBN 80-214-2135-5

Sekanina Lukáš: Evolvable Computational Machines: Formal Approach, In: Intelligent Technologies - Theory and Applications, E-ISCI 2002, Amsterdam, NL, IOS, 2002, pp. 166-172, ISBN 1-58603-256-9

Sekanina Lukáš: Image Filter Design with Evolvable Hardware, In: Applications of Evolutionary Computing, Berlin, DE, Springer, 2002, pp. 255-266, ISBN 3-540-43432-1

Sekanina Lukáš: Nanostructures and bio-inspired computer engineering (Abstract), In: Nano'02 (Abstracts), Brno, CZ, CERM, 2002, pp. 74-74, ISBN 80-7204-258-0

Sekanina Lukáš: Nanostructures and bio-inspired computer engineering, In: Proceedings of Nano02, Ostrava, CZ, Repronis, 2002, pp. 233-236, ISBN 80-7329-027-8

Schwarz Josef, Očenášek Jiří: Bayes-Dirichlet BDD as a probabilistic model for logic functions and evolutionary circuit decomposer, In: Mendel 2002, Brno, CZ, FSI BUT, 2002, pp. 117-124, ISBN 80-214-2135-5

Schwarz Josef, Očenášek Jiří: Ratio cut hypergraph partitioning using BDD based MBOA optimization algorithm, In: Proceedings of IEEE Design and Diagnostics of Electronic Circuits and Systems Workshop, Brno, CZ, FSI BUT, 2002, pp. 87-96, ISBN 80-214-2094-4

Sllame Azeddien M., Drábek Vladimír: A Design Space Exploration Scheme for High-Level Synthesis Systems, In: Proceedings of 36th International Conference MOSIS '02 Modelling and Simulation of Systems, Ostrava, CZ, MARQ, 2002, pp. 305-312, ISBN 80-85988-71-2

Sllame Azeddien M., Drábek Vladimír: An Efficient List-Based Scheduling Algorithm for High-Level-Synthesis, In: EUROMICRO Symposium on Digital System Design (DSD2002): Architecture, Methods and Tools, IEEE Computer Society, Dortmund, Germany, DE, ICSP, 2002, pp. 316-323, ISBN 0-7695-1790-0

Sllame Azeddien M., Sekanina Lukáš: An Evolutionary-Based Algorithm to the Module Selection Problem with Resource Sharing in High-Level Synthesis (Extended Abstract), In: Advances in Nature-Inspired Computation: The PPSN VII Workshops, Reading, GB, PEDAL, 2002, pp. 45-46, ISBN 0-9543481-0-9

Sllame Azeddien M., Sekanina Lukáš: An Evolutionary-Based Algorithm to the Module Selection Process in High-Level Synthesis, In: Mendel 2002 - 8th International Conference on Soft Computing, Brno, CZ, BUT, 2002, pp. 87-92, ISBN 80-214-2135-5

Sllame Azeddien M.: Efficient Design Space Characterization Toward Realizing High-Performance Digital systems, In: Proceedings of Electronic Devices and Systems EDS'02 Conference, Brno, CZ, BUT, 2002, pp. 144-149, ISBN 80-214-2180-0

Staroba Jiří, Dvořák Václav: Parallel Linear Equations Solvers for Scientific Simulation: Cluster and SMP Experience, In: Proceedings of XXIVth International Autumn Colloquium ASIS'02 Advanced Simulation of Systems, Ostrava, CZ, MARQ, 2002, pp. 225-230, ISBN 80-85988-77-1

Staroba Jiří: Optimization of a Fully Distributed Stack Filter Using Genetic Algorithms, In: Proc. of 8th conference Student EEICT, Brno, CZ, FEKT BUT, 2002, pp. 501-505, ISBN 80-214-2116-9

Strnadel Josef, Kotásek Zdeněk: Normalized Testability Measures at RT Level: Utilization and Reasons for Creation, In: Proceedings of 36th International Conference MOSIS '02 Modeling and Simulation of Systems, Ostrava, CZ, MARQ, 2002, pp. 297-304, ISBN 80-85988-71-2

Strnadel Josef, Kotásek Zdeněk: Optimizing Solution of the Scan Problem at RT Level Based on a Genetic Algorithm, In: Proceedings of 5th IEEE Design and Diagnostics of Electronics Circuits and Systems Workshop, Brno, CZ, BUT, 2002, pp. 44-51, ISBN 80-214-2094-4

Strnadel Josef, Kotásek Zdeněk: Testability Improvements Based on the Combination of Analytical and Evolutionary Approaches at RT Level, In: Proceedings of Euromicro Symposium on Digital System Design Architectures, Methods and Tools DSD'2002, Los Alamitos, US, ICSP, 2002, pp. 166-173, ISBN 0-7695-1790-0

Strnadel Josef: Evaluating Cost/Quality Trade-off Solutions Proposed During a DFT Process, In: Proceeding of 8th Conference Student EEICT 2002, Brno, CZ, BUT, 2002, pp. 506-510, ISBN 80-214-2116-9

Strnadel Josef: Normalized Testability Measures Based on RTL Digital Circuit Graph Model Analysis, In: Proceedings of The fifth International Scientific Conference Electronic Computers and Informatics 2002, Košice, SK, TU v Košiciach, 2002, pp. 200-205, ISBN 80-7099-879-2

Ščuglík František: Comparing CSP representation and First order logic, In: Experimental Methods in Acoustic and Electromagnetic Emission, Brno, CZ, BUT, 2002, pp. 341-344, ISBN 80-214-2180-0

Ščuglík František: Formal specification and verification of already composed systems, In: Proceedings of 8th Conference STUDENT EEICT 2002, Brno, CZ, FEEC BUT, 2002, pp. 511-515, ISBN 80-214-2116-9

Švéda Miroslav, Ráb Jaroslav: Designing dedicated distributed architectures for embedded systems, In: Proceedings of Electronic Devices and Systems, 2002, Brno, CZ, BUT, 2002, pp. 301-310, ISBN 80-214-2180-0

Švéda Miroslav, Rattray Charles, Rozenblit Jerzy: Formal Specifications of Computer-Based Systems, In: Proceedings of the Ninth IEEE International Conference and Workshop on the Engineering of Computer-Based Systems, Los Alamitos, CA, US, ICSP, 2002, pp. 224-225, ISBN 0-7695-1549-5

Švéda Miroslav, Vrba Radimír: An Integrated Framework for Internet-Based Applications of Smart Sensors, In: Proceedings of IEEE Sensors 2002, Piscataway, New York, US, ICSP, 2002, pp. 1543-1548, ISBN 0-7803-7454-1

Švéda Miroslav, Vrba Radimír: An Integrated Framework for Sensor-Based Embedded Systems, In: Proceedings of the Ninth IEEE International Conference and Workshop on the Engineering of Computer-Based Systems, Los Alamitos, CA, US, ICSP, 2002, pp. 195-202, ISBN 0-7695-1549-5

Švéda Miroslav: A fail-stop model for design of embedded systems, In: Telecommunications and Signal Processing TSP-2002, Brno, CZ, BUT, 2002, pp. 152-155, ISBN 80-214-2172-X

Švéda Miroslav: Rapid Prototyping of Embedded Distributed Systems, In: IEEE Design and Diagnostics of Electronic Circuits and Systems, Brno, CZ, FIT BUT, 2002, pp. 320-323, ISBN 80-214-2094-4

Zbořil František, Kotásek Zdeněk, Mika Daniel, Strnadel Josef: The Identification of Feedback Loops in RTL Structures, In: Proceedings of The fifth International Scientific Conference Electronic Computers and Informatics 2002, Košice, CZ, TU in Košice, 2002, pp. 142-147, ISBN 80-7099-879-2

Proceedings:

Hlavička Jan, Kotásek Zdeněk, Marinissen Erik Jan, Novák Ondřej, Růžička Richard, Straube Bernd: Proc. of the 5th International Workshop IEEE Design and Diagnostics of Electronic Circuits and Systems, Brno, CZ, FIT BUT, 2002, p. 427, ISBN 80-214-2094-4

Rattray Charles, Švéda Miroslav, Rozenblit Jerzy: IEEE TC-ECBS and IFIP WG10.1 Joint Workshop on Formal Specifications of Computer-Based Systems, Lund, SE, US, 2002, p. 102, ISBN 1-85769-169-5

Reference Manuals:

Eysselt Miloš: The running out study programmes called Electrical Engineering and Computer Science at the FIT in 2002/2003: First stage of EI-MGR-5 programme, EI-BC-3, and the comprehensive examination, Brno, CZ, FIT BUT, 2002, p. 21

Eysselt Miloš: Information Technology: Three-Year Bachelor Study Programme IT-BC-3 (The First, Hard-Copy, Issue), Brno, CZ, FIT BUT, 2002, p. 16

Eysselt Miloš: Information Technology: Three-Year Bachelor Study Programme IT-BC-3 (The Second, WWW Issue), Brno, CZ, FIT BUT, 2002, p. 16

Eysselt Miloš: The study plans for the specialization Computer Science and Engineering of the running out study programmes at the FIT in 2002/2003 (published on 2002-02-22), Brno, CZ, FIT BUT, 2002, p. 33

Eysselt Miloš: Study programmes at the FIT: EI – Electrical Engineering and Computer Science, 2002/2003, MJ servis, spol. s r.o., Brno, CZ, FIT BUT, 2002, p. 80

Eysselt Miloš: Study programmes at the FIT: IT – Information Technology, 2002/2003, MJ servis, spol. s r.o., Brno, CZ, FIT BUT, 2002, p. 72

Lecture Texts and Notes:

Dvořák Václav: Architecture and programming of parallel systems, teaching texts for APP, IT specialization, Brno, CZ, 2002, p. 630

Eysselt Miloš: Graphic Symbol for Logic Gates and for Lines (WWW Edition), UPSY FIT BUT, Brno, CZ, 2002, p. 12

Eysselt Miloš: Logic and Functional Diagrams, CZ Standard ONT345535 (WWW Edition), UPSY FIT BUT, Brno, CZ, 2002, p. 30

Eysselt Miloš: Programmable Logic Devices: Foundations & Examples, 2nd WWW Edition, UPSY FIT BUT, Brno, CZ, 2002, p. 34

Eysselt Miloš: Digital Systems Design: Basic Set of Problems (WWW Edition), FIT BUT, Brno, CZ, 2002, p. 38

Schwarz Josef: Applied evolutionary algorithms, teaching text for EVA, IT specialization, FIT BUT, Brno, CZ, 2002, p. 135

Švéda Miroslav: Specification of embedded systems, teaching texts for SVS, IT specialization, Brno, CZ, 2002, p. 52

Chapters of Books:

Čejka Rudolf, Dvořák Václav, Staroba Jiří: Predicting performance of SMP clusters, Distributed and Parallel Systems - Cluster and Grid Computing, Boston/London, US, Kluwer, 2002, pp. 38-45, ISBN 1-4020-7209-0

Dissertations:

Růžička Richard: The formal approach to analysis of digital circuits testability at the RT level, Brno, CZ, 2002, p. 102

Sekanina Lukáš: Component Approach to Evolvable Systems, Brno, CZ, 2002, p. 132

Lectures:

Eysselt Miloš: Zustand der Ausbildung mittels der Methode "E-Learning" an der TU Brno: FIT, Halle/Saale, DE, ISW e.V., 2002, p. 3

Other Activities

- Organization of "The 5th IEEE Design and Diagnostics of Electronic Circuits and Systems 2002. An international conference, participants from 27 countries and four continents.
- Ing. Richard Růžička, Ph.D.: The Rector's award for excellent results in science and other activities accomplished for the benefit of BUT and doctoral students
- Ing. Josef Strnadel: Siemens award – a grant for doctoral students
- Ing. Luděk Crha: Siemens award for the diploma thesis.
- Doc. Ing. Vladimír Drábek, CSc., Ing. Lukáš Sekanina, Ph.D.: IEEE DDECS award for the best article in the category Circuit Design in the IEEE DDECS 2002 workshop.
- Ing. Lukáš Sekanina, Ph.D.: The best paper award for Automata of Evolvable Computational Machines at the EEICT Student Conference, 2002.
- Doc. Ing. Zdeněk Kotásek, CSc.: Certificate of Appreciation awarded by IEEE Computer Society for contributing to the organization of IEEE DDECS 2002 workshop.

- Membership in programme committees of international scientific conferences: The 5th International Conference on Evolvable Systems: From Biology to Hardware ICES 2003 (Ing. Lukáš Sekanina, Ph.D.), The 5th IEEE Design and Diagnostics of Electronic Circuits and Systems 2002 (Doc. Ing. Zdeněk Kotásek, CSc.).
- Co-operation in creating four Expressions of Interest focused on Excellence Network and Integrated Projects for the 6th framework programme of EU.

COMPUTER CENTRE

The Computer Centre is a self-contained part of the **Faculty of Information Technology**. It guarantees the running of computer laboratories, both local and faculty net, servers and information systems. The computer laboratories of the Centre are utilised both for scheduled tuition and for work on projects, diploma theses and research projects. In computer and specialized laboratories student can make use of 170 personal computers and Sun workstations, which have the Microsoft Windows XP, RedHat Linux and Solaris operation systems. All computers have the Internet services: Web, e-mail, conference, Telnet, FTP, etc., There is a dedicated server Unix with a disk capacity of 240 GB at students' disposal, where they can receive and send their e-mail, develop their web pages and have their home directories for the whole period of their study at the faculty. When working in Windows XP they can also utilise the student's file server Novell NetWare.

The computer net interconnecting all laboratories, lecture halls and offices is based on a gigabit Ethernet and alternate switching at the 3rd level to guarantee a sufficient carrying capacity even at maximum load. Connection to Brno Metropolitan Net and to the Internet is guaranteed by duplicated optical channels with a transfer capacity of 1 Gb/s.

Students have an access to the faculty servers and can work from home or BUT halls of residence, which are also connected to the Metropolitan Net.

Staff

Head

Lampa Petr, Ing.

Deputy Head

Čejka Rudolf, Ing.

Centre Manager

Dupalová Helena

System Integrator

Gaďorek Petr, Ing.

Information System Administrator

Michal Bohumil, Ing.

Computer Network Administrator

Lampa Petr, Ing.

OS Administrator

Čejka Rudolf, Ing.

Kašpárek Tomáš, Ing.

Technical and Administrative Staff

Kappler Karel

Kreslík František, Ing.

Duránik Lukáš

Attendants

Almášiová Květoslava

Habrdová Stella

Nečasová Milena
Samsonová Radomíra

Equipment

Teaching and Research Laboratories

- Laboratory with SUN Ultra 5 (20 workstations)
- Laboratories with personal computers and Windows XP or Linux systems (90 workstations)
- Multimedia laboratory equipped with 3D accelerators and Windows NT or Linux (22 workstations)

Open Computer Laboratories

- 2 unscheduled Internet laboratories open to all students of the Faculty (total of 42 computers+2 connecting points for notebooks)

Special Instrumentation and Computers

- Sun Enterprise 450 server with 4 UltraSPARC II processors, 4 GB oper. memory and 255 GB disc capacity
- Student server (Web, email, file server), 2 Intel Pentium III/800 processors, 960 MB RAM, RAID-5 disk field with the capacity of 240 GB, network card 1 Gb/s.
- Novell NetWare student and staff server with 2 Intel Pentium III/800 processors, 512 MB RAM, 140 GB RAID-5 disk capacity with the network card 1 Gb/s.
- FTP server with a RAID-5 disk field with the capacity of 460 GB.
- SGI Octane, Indy, Indigo, Sun Ultra 5 a SPARCstation 5 workstations.
- Computer network based on Gigabit switches at the 3rd level - Extreme Networks Black Diamond 6808 a Summit 48.
- A3 HP LaserJet 8150 and A4 HP LaserJet 4300 high performance network printers, and Tektronix Phaser 740Plus colour printer.

Software

- Oracle 9i, including development tools (in the framework of Oracle academic programme).
- Centura Team Developer development tools and SQLBase database server (a gift within "Centura Scientific Partner" programme).
- Object-oriented CASE system Paradigm Plus by Computer Associates.
- OrCAD a ModelSim FL systems.
- Software in the framework of Microsoft Academic Alliance programme (development tools).
- Borland Pascal, C++, Delphi, C++ Builder.
- Adobe Photoshop, Autodesk 3D studio, Caligari TrueSpace.
- GNU Software, TeX, Linux, FreeBSD, MySQL, Apache servers, PHP4.

Tuition

Abbr	Course	Sem	Cr	Hours	Lecturer
GUR	Graphical User Interfaces	Z	5	26-0-0-8-18	Lampa Petr, Ing.
OS2	Operating Systems 2	L	6	39-0-0-8-18	Lampa Petr, Ing.

Research Projects

IMPIT – International Students Mobility, MŠMT, MMI 20059, 2002

Investigators: Abu Kteish Ibrahim, Dražanský Martin, Kašpárek Tomáš, Křena Bohuslav, Pečiva Jan, Zemčík Pavel

Parallel System Performance Prediction and Tuning, GAČR, GA102/02/0503, 2002-2004

Investigators: Dvořák Václav, Čejka Rudolf, Kutálek Vladimír, Očenášek Jiří, Schwarz Josef, Staroba Jiří

Highspeed Backbone of BUT, FRVŠ MŠMT, FR1901/2002/A, 2002

Investigators: Lampa Petr, Smolík Stanislav, Záhořík Vladimír

MOBIVAS - Downloadable MOBILE Value-Added Services through Software Radio & Switching Integrated Platforms, UNKNOWN, IST-1999-10206, 2001-2002

Investigators: Čejka Rudolf

Research of Information and Control Systems, CEZ MŠMT, MSM 262200012, 1999-2003

Investigators: Bejček Ludvík, Borecká Marcela, Bradáč Zdeněk, Cvrček Daniel, Čejka Miloslav, Čejka Rudolf, Čejka Milan, Drábek Vladimír, Dvořák Václav, Eysselt Miloš, Fědor Martin, Fučík Otto, Gaďorek Petr, Hanáček Petr, Hoder Karel, Holec Radovan, Honec Jozef, Honzík Jan M., Hruška Tomáš, Janoušek Vladimír, Jura Pavel, Kolář Dušan, Kotásek Zdeněk, Kovár Martin, Kreslík František, Kreslíková Jitka, Kunovský Jiří, Lampa Petr, Linhart Miroslav, Macho Tomáš, Malec Zdeněk, Meduna Alexander, Michal Bohumil, Peringer Petr, Rábová Zdeňka, Richter Miroslav, Serba Ivo, Schwarz Josef, Šolc František, Švéda Miroslav, Valenta Pavel, Vojnar Tomáš, Zbořil František, Zemčík Pavel, Zendulka Jaroslav, Zezulka František

Co-operation

Visits of Staff Members to Foreign Institutions

- Kašpárek Tomáš, MSc., University of Bristol, Department of Computer Science, Merchant Ventures Building, Bristol, GB, 2 months
- Lampa Petr, MSc., Microsoft Research Cambridge, St. John College, Cambridge, GB, 5 days

Membership in Institutions

- Čejka Rudolf, MSc.,
 - Czechoslovak TeX Users Group (CSTUG)
 - Czech and Slovak Simulation Society (CSSS)
- Lampa Petr, Ing.,
 - Usenix
 - Usenix, Sage
 - editorial board of Connect!

Publications:

Chapters in Books:

Čejka Rudolf, Dvořák Václav, Staroba Jiří: Predicting performance of SMP clusters, Distributed and Parallel Systems - Cluster and Grid Computing, Boston/London, US, Kluwer, 2002, pp. 38-45, ISBN 1-4020-7209-0

Conference Contributions:

Kašpárek Tomáš: Preparing Compaq iPAQ for Linux Kernel Development, In: Proceedings of 8th EEICT conference, Brno, CZ, FIT BUT, 2002, pp. 164-166, ISBN 80-214-2114-2