FACULTY OF INFORMATION TECHNOLOGY

BRNO UNIVERSITY OF TECHNOLOGY

ANNUAL REPORT 2006
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I. INTRODUCTION

Brno University of Technology (BUT) is the second largest and the second oldest technical university in the Czech Republic. It was founded in 1849 for technical, agricultural and commercial specialization. The languages of instruction were Czech and German. As a consequence of political and national disputes, Czech ceased to be used as language of tuition and in 1899 the Czech High Technical School was founded in Brno. After World War I and the foundation of Czechoslovakia, the school merged with the German Technical High School (originally bilingual) to form the High Technical School in Brno, which later carried the name of Dr. Edvard Beneš, the second president of Czechoslovakia. In the period between World War I and World War II this school 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 crowned by an approval of new study programmes for both faculties by the Accreditation Board of the Ministry of Education of the Czech Republic and its consent with the foundation of the new faculty. In case of the FIT it was a three-year Bachelor’s study programme, and a follow-up two-year Master’s study programme.

In the first year of the first four-year office, BUT was directed by Prof. Ing. Karel Rais, CSc., MBA, who was elected Rector by the Academic Senate in November 2006. He started his first four-year office in February 2006. Doc. Dr.Ing. Petr Hanáček, Head of the Department of Intelligent Systems, was another significant leading personality of BUT coming from our faculty – he was the Chairman of the Academic Senate of Brno University of Technology (AS BUT) and the Chairman of the Chamber of Academic Staff and at the same time worked as a member of the Economic Committee of the AS BUT. Another representative of the FIT in the AS BUT, Doc. Ing. Jiří Kunovský, CSc., from the Department of Intelligent Systems, worked in the Pedagogical Committee of the AS BUT. Bc. Jakub Mahdal, a student of the follow-up Master’s study programme, worked as a representative of the Student’s Chamber of the AS BUT and as a member of the Economic Committee of the AS BUT. Prof. Ing. Tomáš Hruška, CSc., Prof. RNDr. Milan Češka, CSc., and Prof. Ing. Jan M. Honzík, CSc., were members of the Scientific Board of BUT.

In 2006, Prof. Ing. Tomáš Hruška, CSc., the Dean, directed the FIT together with five Vice-Deans. The Vice-Deans were in charge of research and creative activities, international and external relations and campus development in co-operation with the relevant Dean’s Office Departments. The Research Board, the Pedagogical Council and the Disciplinary Board are autonomous academic bodies. Dean’s advisory boards are the following: Dean’s Board, Study Programme Board, Creative Project Board and Information System Board. The Faculty Secretary was responsible for the finance, operation and development of the faculty together with the individual sections of the Dean’s Office. In 2006, there was a teaching staff of 51 members and 2200 students in all state-supported study programme.

The faculty management in 2006:

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

Ing. Zdeněk Bouša worked as the Faculty Secretary. Doc. Ing. Jaroslav Zendulka, CSc., Head of the Department of Information Systems, was the Chairman of the Academic Senate of the FIT. Ing. Petr Lampa, Head of the Computer Centre FIT BUT, was the first Vice-Chairman of the Academic Senate of the FIT BUT and, at the same time, the Chairman of the Academic Chamber of the FIT BUT.
Zdeněk Letko, Bc., a student, worked in the position of the second Vice-Chairman of the Academic Senate of the FIT, and, at the same time, in the position of the President of the Student Union FIT BUT. Doc. Ing. Josef Schwarz, CSc., represented the Trade Union in the faculty management.

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

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

In 2006, the FIT continued tuition in the below-mentioned Bachelor's and Master's study programmes Electrical Engineering and Computer Science (EI), registered in 1999 according to University Education Act. These running out study programmes are likely to continue until the end of the academic year 2006/2007. In 2006, the FIT also provided tuition in the Ph.D. study programme Information Technology (DIT). 2006 was the fifth year of the existence of the Bachelor's study programme Information Technology, which was introduced to the faculty in 2002/2003. The new follow-up Master's study programme Information Technology (MIT) continued in its second year of existence with 180 students. These new study programmes correspond to the Bologna Declaration on the Development of Higher Education in Europe and their structure of studies is fully compatible within Europe.

Study programmes taught at the FIT in 2006:

Bachelor Study programme Electrical Engineering and Computer Science  
Nominal length of study: 3.5 years  
Line of study Computer Science and Engineering (VTB)

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

Master Study programme Electrical Engineering and Computer Science  
Nominal length of study: 5 years  
Line of study Computer Science and Engineering (VTI)

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

A new follow-up Master Study programme Information Technology launched at the FIT in the academic year 2005/2006 with the following lines of study:

- Information Systems (MIS)
- Computer Graphics and Multimedia (MGM)
- Intelligent Systems (MIN)
- Computer Systems and Networks (MPS)
A Doctoral Study programme
Nominal length of study: 3 years (internal form of study)

Line of study Information Technology (DIT)

In 2006, 281 Bachelors, 185 students of the Master Study programme graduated at the FIT and 9 students completed the Doctoral Study programme. 633 new students entered the first year of the regular Bachelor Study programme, 284 students entered the follow-up Master Study programme, and 29 students entered the postgraduate doctoral study, 25 of them in the internal form, and 4 of them in the combined form of study.

In 2006, 37 foreign students studied at the FIT BUT within the Socrates/Erasmus mobility programme.

In 2006, one habilitation procedure for professorship started and Doc. Ing. Daniel Cvrček, Ph.D., Doc. Ing. Lukáš Sekanina, Ph.D., and Doc. RNDr. Pavel Smrž, Ph.D. successfully completed the habilitation proceedings for the title of “Docent” (Associate Professor).

The most significant events and activities that influenced the life at the faculty in 2006 were the following:

- Open Day at the FIT BUT, on 13th January, 2006,
- The traditional FIT/FEEC ball, a high-level and well-organized event which took place in International Hotel, on 3rd February 2006,
- Work on the innovation of the “Long-Term Plan of Development of BUT”,
- Activities of the pedagogical staff of the FIT related to the new study programmes,
- 5 new GACR (Grant Agency of the Czech Republic) projects (2 standard and 3 postdoctoral) were accepted in 2006, the total number of GACR projects at the faculty being 16 (11 standard, 1 doctoral and 4 postdoctoral projects),
- 18 new FRVS (Higher Education Development Fund) projects were accepted,
- 5 MSMT (Ministry of Education) projects, 1 AV ČR (Academy of Science of the Czech Republic) project, 4 MPO ČR (Ministry of Defence of the Czech Republic) projects, 2 RP MSMT and 5 CESNET projects were worked on,
- 5 EU (European Union) projects were worked on at the FIT BUT,
- Experts from the FIT participated in the evaluation of exhibits for the “Cristal Disc” award at INVEX trade fair,
- The IASTED International Conference on Databases and Applications (DBA 2006) was held on 13th – 15th February, 2006,
- Co-organization of the ECBS 2006 (13th Annual IEEE International Conference and Workshop on the Engineering of Computer Based Systems), Potsdam, 26th – 30th March, 2006,
- Co-organization of the ISIM Conference 2006 (Information Systems Implementation and Modelling 2006), Přerov, 25th – 27th April, 2006, FIT BUT being the main organizer,
- Co-organization of WFM 2006 (1st International Workshop on Formal Models), Přerov, 25th – 27th April, 2006,
- Co-organization of MOSIS 2006 (Modelling and Simulation of Systems), Přerov, 25th – 27th April, 2006,
- The 2nd Open Day for those interested in the Doctoral study programme at the FIT BUT, took place on 26th April, 2006,
- In April, Brno Days dedicated to Kurt Gödel (a significant mathematician, physicist and philosopher) were organized, one part of the celebration being held on 28th April at the FIT BUT, where the E112 lecture hall was solemnly named after him and a commemorative plaque was unveiled showing his name and a brief commentary on his life,
- Participation in the 3nd Joint Workshop on Multimodal Interaction and Related Machine Learning Algorithms, Washington D.C., USA, 1st – 3rd May, 2006,
- Participation in International Conference on Acoustics, Speech, and Signal Processing, ICASSP 2006, Toulouse, France, 14th – 19th May, 2006,
- Participation in evaluations and NIST Workshop and The Speaker and Language Recognition Workshop, Puerto Rico, San Juan, 25th – 30th June, 2006,
- Participation in IEEE Odyssey 2006: The Speaker and Language Recognition Workshop San Juan, Puerto Rico, 28th – 30th June, 2006,
- Ongoing co-operation with the Ministry of Defence in the field of security technologies and automatic speech processing, including the organization of some significant seminars,
- Participation in the 1st NASA/ESA Conference on Adaptive Hardware and Systems, Istanbul, 15th – 18th June, 2006,
- Annual Scientific Conference of the FIT BUT – a session held on occasion of 5th anniversary of the foundation of the FIT BUT, Skalský Dvůr, 11th – 12th September, 2006,
- Co-organization of ASIS Conference (28th International Autumn Colloquium Advanced Simulation of Systems), Vranov, 12th – 14th September, 2006,
- CSEW 2006 (Computer Science Education Workshop) - a meeting of Czech and Slovak departments and faculties involved in computer science, Gabčíkovo, 26th – 27th October, 2006,
- Participation in NIST Spoken Term Detection evaluations and in NIST Spoken Term Detection Evaluation Workshop, Gaithersburg, MD, USA, 14th – 15th December, 2006,
- Co-organization of the EMI, international students’competition supported by Honeywell,
- Activities of Doc. Ing. Vladimír Drábek, CSc., Vice-Dean, and his colleagues resulting in automated assessment of written entrance examinations,
- Activities of pedagogical staff connected with information sessions at different types of secondary schools,
• Co-organization of STUDENT EEICT 2006 conference, the main organizer being the Faculty of Electrical Engineering and Communications, Brno University of Technology,
• Participation in the GAUDEAMUS 2006 trade fair and presentation of the FIT and its study programmes,
• The second stage of the ‘Reconstruction and building of Božetěchova 1 and 2 campuses’, i.e. the reconstruction of Carthusian monastery and building of the lecture hall centre II. was launched,
• An opening ceremony related to the first stage of ‘Reconstruction and building of Božetěchova 1 and 2’ was held on 19th September 2006. By that date all faculty departments and the Computer Centre had been transferred into new buildings of Božetěchova 1.
• The finals of "Baltazar and Baltík", a national programming competition, was held at the FIT BUT on 10th -12th November 2006. It was organized by SGP s.r.o. and Ing. Soukup, with a contribution of the FIT. Prof. Ing. Jan M Honzík, CSc., handed over valuable prizes to the finalists at the closing celebration.
• The finals of Filuta 2006, a competition in programming for secondary school students, took place at the FIT premises on 9th December 2006 together with the finals of "Girls for Computers and Computers for Girls" (Holky pro počítač a počítač pro holky) competition for secondary school female students, where the prize awarding was accompanied by publication of the best essays.
• Activities of the AS FIT BUT members, namely Doc.Ing. Jaroslav Zendulka, CSc., Ing. Petr Lampa, Ing. Bohuslav Kréna, Ph.D., and Zdeněk Letko, related to the organization, development and economic interests of the faculty,
• Activities of Prof. Ing. Jan M. Honzík, CSc., Vice-Dean for Public Relations, in Socrates/Erasmus and other European programmes,
• Activities linked with the Bachelor’s study programme ‘Information Technology’, a part of MSMT programmes, especially preparatory work for the accreditation of the distance form of this programme, under Prof. Ing. Jan M. Honzík, CSc., charge,
• Improvement of the student’s part of the FIT Information System and development of the staff’s part of the FIT Information System,
• The first and constituent assembly related to the two-year "Curriculum Development" project (within the Socrates-Erasmus programme) was held on 12th December 2006. Ing. Dorine Gevaert from KHBO Oostende-Brugge is the leader of the programme and FIT and FEEC BUT and Technical University of Sofia, Bulgaria, are the partners.

On 18th May 2006, Doc. Ing. Zdena Rábová, CSc., a founding member of the faculty, department, and specialization, passed away at the age of 70. She was a significant founder of the Czech school of modelling and simulation attended by dozens of graduates of doctoral studies, a number of associate professors and three professors. She worked to the last moment. In Zdena Rábová, the faculty lost a kind, efficient, reliable and skilled research worker. She left an indelible mark in the history of the faculty.
Significant Awards in 2006

Silver BUT Medals were awarded to Ing. Lukáš Burget, Ph.D., Ing. Pavel Matějka and Ing. Petr Schwarz, members of Speech@FIT research group, for outstanding results in research and scientific work in 2006.

Five Ph.D. students of the FIT BUT were awarded Prof. Hlavička Prize at the Czech-Slovak seminar Computer Architecture and Diagnostics which was held on 18th – 20th September 2006 in Poprad, Slovakia, for their contributions in the individual categories, namely: Ing. Lukáš Stareček - 1st place in the category of the first year, Ing. Michal Bidlo 1st – 2nd place and Ing. Jaroslav Škarvada 3rd place in the category of the second year, Ing. Miloš Ohlidal 1st place and Ing. Tomáš Pečenka 2nd place in the category of the third year.

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

Bc. Tomáš Karásek was awarded the Certificate of Merit in AFCEA 2006, a student’s competition for the best achievement in the area of information and communication system organized by the Czech section of AFCEA (Armed Forces Communications & Electronics Association).

Petr Blaháč won 2nd place and Bc. Jaromír Smrček won 3rd place in AFCEA 2006, a student’s competition for the best achievement in the area of information and communication system organized by the Czech section of AFCEA (Armed Forces Communications & Electronics Association).

Petr Kaleta, Martin Bambas, Aleš Šturala (all from the FIT BUT) together with Daniel Široký from the FEEC BUT (Faculty of Electrical Engineering and Communications) achieved extraordinary success in the world Microsoft Imagine Cup competition for creating a smart white cane for the visually impaired. The achievement was accompanied by special scholarships.

Doc. Ing. Lukáš Sekanina, Ph.D., Ing. Michal Bidlo and Ing. Radek Bidlo received Achievement Award Certificate at the XV. International Conference on Computer and Information Science and Engineering.

Patrik Beck, Juraj Blaho, Petr Kaštovský, Martin Košek and Lukáš Sol'anka, students of the FIT, were awarded GE Foundation Scholar-Leaders Program 2005-2006, in the second year of the scholarship programme for the Czech Republic (General Electric Foundation), meant for 15 excellent second-year students of five selected universities (ČVUT, ČZU, Masaryk University, VŠB-TU and BUT) involved in economics, management, engineering or technology.

The faculty also successfully presented a system for speaker recognition developed by the **Speech@FIT group** at NIST 2006 Speaker Recognition evaluation organized by the U.S. National Institute of Standards and Technology among 37 competing laboratories worldwide (the rules of NIST do not allow to publish the exact placement).

**Ing. Pavel Matějka** reached the finals of the **Student Paper Contest** at the International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2006) in Toulouse, France, presenting ‘Use of Anti-models to Further Improve State-of-the-art PRLM’, with **Ing. Petr Schwarz** and **Ing. Lukáš Burget** as co-authors.

In 2006, FIT BUT continued co-operating with the following significant partners:

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

2006 was the fifth year of the existence of the FIT. The main goal was the introduction of the 2nd year of a completely new follow-up Master Study programme with 180 students admitted and the acquisition of a new research project. Another significant step was the completion of the first stage of the reconstruction and building of Božetěchova 1 and 2 faculty premises.

The faculty achieved very good economic results in 2006 and the total economic trend was favourable. The improvement of material and financial situation at the faculty was due to successful research project leaders, most of all projects of the Grant Agency of the Czech Republic, Grant Agency of the Academy of Science of the CR, Higher Education Development Fund (FRVS) and projects supported by the EU.

On behalf of the management of the Faculty of Information Technology BUT I wish all members of academic staff, students, and all employees of the faculty favourable working conditions, and success in their efforts for a further development and benefit of all, despite the present complicated situation due to building work and reconstruction of the faculty premises. The building activities are performed with a prospect of significant improvement of our future...
working conditions. At the same time, I thank all employees who contributed to the functioning of the FIT in its fifth year of existence, for the extraordinary efforts devoted to all activities related with the foundation of the FIT, and for mutual understanding, solidarity, and wisdom they showed when seeking solutions to difficult problems.

Prof. Ing. Tomáš Hruška, CSc.
Dean of the FIT BUT
## II. AREAS OF ACTIVITIES AT THE FIT

### II.1 Study Programmes

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

<table>
<thead>
<tr>
<th>Data Point</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of applications for admission</td>
<td>1967</td>
</tr>
<tr>
<td>Number of applicants who sat for the entrance examination, including those who appeared on the back-up date</td>
<td>1444</td>
</tr>
<tr>
<td>Number of positive acceptance decisions, including those refused because of limited capacity</td>
<td>1165</td>
</tr>
<tr>
<td>Number of students who failed or did not turn up at the examination</td>
<td>802</td>
</tr>
<tr>
<td>Number of students admitted, without applicants admitted after reviewing the original decision</td>
<td>819</td>
</tr>
<tr>
<td>Number of students admitted</td>
<td>819</td>
</tr>
<tr>
<td>Number of students enrolled</td>
<td>633</td>
</tr>
<tr>
<td>Number of graduates, including those from the running-out programme (6)</td>
<td>281</td>
</tr>
</tbody>
</table>

#### II.1.2. Follow-up Master's study programme - Information Technology (MIT), internal form of study

<table>
<thead>
<tr>
<th>Data Point</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of applications for admission</td>
<td>309</td>
</tr>
<tr>
<td>Number of applicants who sat for the entrance examination, including those who appeared on the back-up date</td>
<td>309</td>
</tr>
<tr>
<td>Number of positive acceptance decisions, including those refused because of limited capacity</td>
<td>309</td>
</tr>
<tr>
<td>Number of students who failed or did not turn up at the examination</td>
<td>0</td>
</tr>
<tr>
<td>Number of students admitted, without applicants admitted after reviewing the original decision</td>
<td>309</td>
</tr>
<tr>
<td>Total number of accepted applicants</td>
<td>309</td>
</tr>
<tr>
<td>Number of enrolled</td>
<td>284</td>
</tr>
<tr>
<td>Number of graduates, including those from the running-out programme (4)</td>
<td>185</td>
</tr>
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</table>

#### II.1.3. Basic Statistical Data

<table>
<thead>
<tr>
<th>Data Point</th>
<th>Value</th>
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<tbody>
<tr>
<td>Total number of students:</td>
<td>2200</td>
</tr>
<tr>
<td>Number of teachers:</td>
<td>51</td>
</tr>
<tr>
<td>Total number of graduates:</td>
<td>466</td>
</tr>
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</table>
## II.1.4. Development of Number of Graduates

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

<table>
<thead>
<tr>
<th>Specialization</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>EI-BC-3</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>23</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT-BC-3</td>
<td>164</td>
<td>275</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EI-MGR-3</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EI-MGR-5</td>
<td>77</td>
<td>96</td>
<td>107</td>
<td>99</td>
<td>87</td>
<td>91</td>
<td>90</td>
<td>181</td>
</tr>
</tbody>
</table>

Doc. Ing. Vladimír Drábek, CSc.
Vice-Dean for Education
II.2. Creative Activities, Science, Research and Postgraduate Doctoral Study

II.2.1. Science and Research

The new faculty continued 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 2006 were the following:

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

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

- Foundation of the Creative Project Board, the Dean’s advisory board that should make the engagement of the faculty in the international collaboration in the sphere of middle-sized and big research projects more efficient.
- A proposal of a new faculty research project.
- Participation in a significant research intention of FEEC BUT, “New trends in microelectronic systems and nanotechnologies” (MICROSYN).
- Co-operation with the Department of Informatics of the Slovak Academy of Science in publishing the journal of Computing and Informatics.
- Activities of members of the FIT in international scientific and research organizations, in editorial boards of journals and programme committees of international conferences (See paragraphs called “Membership in International Organizations and Societies” in parts of this report dedicated to individual departments of the faculty)
- Extensive publication activity of the faculty (21 journal articles and 198 contributions in conference proceedings)
- Acquisition and work on the MSMT project Centre of basic research of LC (Centre of Computer Graphics).
- Work on four proposals of bilateral GACR (Grant Agency of CR) projects in collaboration with Deutsche Forschungsgemeinschaft (DFG).
- On the occasion of 5th anniversary of the existence of the FIT, a scientific conference took place whose main aim was to discuss general problems of the FIT and provide mutual information on the most significant scientific, research and application areas the faculty is dealing with.
• Organization of regular professional seminars with the participation of all faculty departments.
• Further development and use of the faculty information system, which helps to improve the quality of research infrastructure.

### European Union Projects at the FIT in 2006

<table>
<thead>
<tr>
<th>Agency</th>
<th>Theme</th>
<th>Project Code</th>
<th>Name of the Project</th>
<th>Total in thous. CZK</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU</td>
<td>6FP - IST</td>
<td>506811 AMI</td>
<td>Augmented Multi-party Interaction</td>
<td>1 872</td>
</tr>
<tr>
<td>EU</td>
<td>6FP - IST</td>
<td>027231 CARETAKER</td>
<td>Content Analysis and Retrieval Technologies to Apply Knowledge Extraction to Massive Recording</td>
<td>2 846</td>
</tr>
<tr>
<td>EU</td>
<td>6FP</td>
<td>2005-2.5.5 SHADOWS</td>
<td>A Self-Healing Approach to Designing Complex Software Systems</td>
<td>1 972</td>
</tr>
<tr>
<td>EU</td>
<td>6FP - IST</td>
<td>033812 AMIDA</td>
<td>Augmented Multi-party Interaction with Distance Access</td>
<td>2 133</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>8 823</strong></td>
</tr>
</tbody>
</table>

### Grant Agency of Czech Republic (GACR) Projects at the FIT in 2006

<table>
<thead>
<tr>
<th>GA ČR</th>
<th>Name of the Project</th>
<th>Total in thous. CZK</th>
</tr>
</thead>
<tbody>
<tr>
<td>102/06/P383</td>
<td>Interactive Keyword Detector</td>
<td>285</td>
</tr>
<tr>
<td>102/06/P309</td>
<td>Research on Methods of Intelligent System Modelling and Simulation</td>
<td>220</td>
</tr>
<tr>
<td>102/06/P076</td>
<td>Methods and Tools for Automated Bug Detection in SW</td>
<td>237</td>
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<tr>
<td>102/06/0599</td>
<td>Methods of Polymorphic Digital Circuit Design</td>
<td>606</td>
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<tr>
<td>201/06/1821</td>
<td>Algorithms for Image Recognition</td>
<td>767</td>
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<td>102/05/0278</td>
<td>New Trends in Research and Application of Voice Technology</td>
<td>220</td>
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<tr>
<td>102/05/H050</td>
<td>Integrated Approach to Education of PhD Students in the Area of Parallel and Distributed Systems</td>
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<tr>
<td>102/05/0467</td>
<td>Architectures for Embedded System Networks</td>
<td>328</td>
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<tr>
<td>102/05/0723</td>
<td>Framework or Formal Specifications and Prototyping of Network Applications of Information Systems</td>
<td>580</td>
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<tr>
<td>102/05/P193</td>
<td>Optimization in Diagnostics and Digital Systems</td>
<td>131</td>
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<td>102/04/0871</td>
<td>Information System Security – Research on Attacks against Tamper-resistant Cryptographic Hardware</td>
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<td>102/04/0737</td>
<td>Modern Methods of Digital System Synthesis</td>
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<td>102/04/0780</td>
<td>Automated Methods and Tools for the Development of Reliable Parallel and Distributed Systems</td>
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<td>201/04/0441</td>
<td>Optimally Integrated Models of Modern Information Technologies</td>
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## Higher Education Development Fund (FRVS) Projects at the FIT in 2006

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<tr>
<th>FRVS MSMT</th>
<th>Theme</th>
<th>Name of the Project</th>
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<tr>
<td>136</td>
<td>G1</td>
<td>Evolutionary algorithms applied on dynamic problems.</td>
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<td>825</td>
<td>G1</td>
<td>Biology-inspired HW teaching support</td>
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<td>1909</td>
<td>G1</td>
<td>Didactic demonstration of formal Language Models</td>
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<td>2031</td>
<td>A c</td>
<td>Faculty open computer laboratories</td>
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<td>2557</td>
<td>G1</td>
<td>Identification and analysis of relation of process and project management in SW product development and their influence on quality management</td>
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<tr>
<td>2622</td>
<td>A a</td>
<td>Laboratory of advanced communication technologies</td>
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<tr>
<td>2656</td>
<td>A b</td>
<td>Computer classroom for modelling, simulation and GIS</td>
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<tr>
<td>2818</td>
<td>G1</td>
<td>Mobile autonomous robot</td>
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<tr>
<td>2848</td>
<td>G1</td>
<td>Memetic evolutionary algorithms applied to communication scheduling</td>
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<tr>
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<td>G1</td>
<td>Ontologies a Semantic Web</td>
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<td>2880</td>
<td>F1a</td>
<td>Learning tool for C/E Petri net</td>
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<td>2978</td>
<td>Aa</td>
<td>Teaching Support for HW formal verification</td>
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<td>2983</td>
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<td>EDA evolutionary design of group communication schedules</td>
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<td>3064</td>
<td>G1</td>
<td>Bioinformatics and knowledge discovery in biological databases</td>
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<td>3097</td>
<td>G1</td>
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<td>3101</td>
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<td>Formal verification of programs working with dynamic structures</td>
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<td>3198</td>
<td>G1</td>
<td>Testing of embedded systems</td>
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<td>3338</td>
<td>G1</td>
<td>Test scheduling for embedded systems under power constraints</td>
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### Survey of Other Research Projects at the FIT in 2006

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<tr>
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<td>MSM 21630503</td>
<td>New trends in microelectronic systems and nanotechnologies (MIKROSYN)</td>
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<tr>
<td>MSMT</td>
<td>1K04106</td>
<td>Reputation-based security in information systems</td>
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<td>MSMT</td>
<td>2B06052</td>
<td>Determination of markers, screening and early diagnostics of cancer diseases using highly automated processing of multidimensional biomedical images</td>
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<td>MSMT</td>
<td>LC - CPG</td>
<td>Centre of Computer Graphics</td>
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<td>Barrande - Vérification automatique de programmes avec structures de données dynamiques a_pointeurs</td>
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<td>MSMT</td>
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<td>MPO</td>
<td>FT-TA3/006</td>
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<tr>
<td>MPO</td>
<td>FT-TA3/162</td>
<td>Research and application of systems for large data analysis and decision support</td>
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<tr>
<td>MPO</td>
<td>FT-TA3/128</td>
<td>Language and Development Environment for Microprocessor Design</td>
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<td>MPO</td>
<td>FI-IM3/223</td>
<td>Research, Development and Deployment of Secure Client Authorization of Electronic Transactions</td>
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<tr>
<td>AVČR</td>
<td>IET400750408</td>
<td>Rapid prototyping tools for development of HW-accelerated embedded image- and video-processing applications</td>
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<td><strong>Celkem</strong></td>
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### Survey of external sources in funding creative activities at the FIT in 2006

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<td>MSMT</td>
<td>Higher education development fund (FRVS) projects</td>
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<td>MSMT</td>
<td>Other MSMT projects</td>
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<td>MPO</td>
<td>Ministry of Industry and Trade projects</td>
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<td>GACR</td>
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<td>AVČR</td>
<td>Academy of Science of CR project</td>
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<td>EU</td>
<td>Projects of the 5th and 6th framework programme of the EU</td>
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<td><strong>Total</strong></td>
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<td><strong>31 149</strong></td>
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</table>
Funding creative activities at the FIT BUT from external sources in 2006

- EU: 34%
- GAČR: 25%
- MSMT: 33%
- AVČR: 2%
- MPO: 6%
II.2.2. Doctoral Study Programme

- The Information Technology doctoral study programme with one specialization of the same name was started at the same time as the FIT BUT – on 1st January 2002.
- The main tasks solved in this area in 2006 were the following:
  - Co-operation with the Faculty of Electrical Engineering and Communications, BUT and with the Faculty of Informatics, Masaryk University in Brno as far as the offer of courses, organization of the State Doctoral Examinations, and defenses of dissertations are concerned.
  - Integrated approach to education of PhD students in the area of parallel and distributed systems, a GACR doctoral grant in co-operation with the Faculty of Informatics, Masaryk University in Brno.
  - Organization of the Doctoral Workshop on Mathematical and Engineering Methods in Computer Science – MEMICS 2006 - in co-operation with the Faculty of Informatics, Masaryk University in Brno.
  - Open Day for those interested in the Doctoral study programme at the FIT.
  - Offer of a large choice of subjects with respect to high professional quality, balance between theory and application of IT, and detailed descriptions of the individual subjects (both in Czech and in English) on the Internet available to enrolled students as well as prospective applicants for the study.
  - Record of dissertation theses and offer of new themes through the Faculty Information System.
  - Consistent checking of the individual study plans of Ph.D. students followed by differentiated payment of extra scholarship money.
  - Providing a scholarship money “stimulus” for doctoral students who succeed in completing and defending their dissertations during the 3rd and 4th years of study.
  - Participation of Ph.D. students in regular seminars held at the departments of the faculty.
  - Proposal of accreditation of a new 4-year doctoral study programme.

<table>
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<th>Year</th>
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<td>2.</td>
<td>internal</td>
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<tr>
<td>3.</td>
<td>internal</td>
<td>15</td>
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<td>4.</td>
<td>prolonged internal</td>
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<td>5.</td>
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<tr>
<td>6.</td>
<td>combined</td>
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<tr>
<td>7.</td>
<td>combined</td>
<td>5</td>
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<tr>
<td>Total</td>
<td></td>
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</table>
**Ph.D. theses defended in 2006**

Ph.D. student: Arnošt Vladimír, Ing.
Study area: Information technology
Thesis: Simulation of spatial sound propagation
Defended on: 5th June 2006

Ph.D. student: Smolík Petr, Ing.
Study area: Information technology
Thesis: MAMBO metamodelling environment
Supervisor: Hruška Tomáš, Prof. Ing., CSc.
Defended on: 13th June 2006

Ph.D. student: Kopeček Tomáš, Ing.
Study area: Information technology
Thesis: Descriptive complexity and derivational similarity of formal grammars
Supervisor: Meduna Alexander, Prof. RNDr., CSc.
Defended on: 6th October 2006

Ph.D. student: Lorenc Luboš, Ing.
Study area: Information technology
Thesis: Alternative approach to translation: formal models and optimization techniques
Supervisor: Meduna Alexander, Prof. RNDr., CSc.
Defended on: 6th October 2006

Ph.D. student: Lukáš Roman, Ing.
Study area: Information technology
Thesis: Multigenerative grammar systems
Supervisor: Meduna Alexander, Prof. RNDr., CSc.
Defended on: 6th October 2006

Ph.D. student: Martin Vítek, Ing.
Study area: Information technology
Thesis: New operations in the formal language theory and their use
Supervisor: Meduna Alexander, Prof. RNDr., CSc.
Defended on: 6th October 2006

Ph.D. student: Potůček Igor, Ing.
Study area: Information technology
Thesis: Omni-directional image processing for human detection and tracking
Supervisor: Zemčík Pavel, Doc. Dr. Ing.
Defended on: 20th October 2006
Ph.D. student: Čech Vladimír, Ing.
Study area: Information technology
Thesis: Principles, processes a technology of distant education
Supervisor: Honzík Jan M., Prof. Ing., CSc.
Defended on: 20th October 2006

Ph.D. student: Slavíček Pavel, Ing.
Study area: Information technology
Thesis: Distributed simulation environment
Supervisor: Rábová Zdeňka, Doc. Ing., CSc.
Defended on: 3rd November 2006

Prof. RNDr. Milan Češka, CSc.
Vice-Dean, Creative Activities
II.2.3. Student Creative Activities

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

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

In 2006, the student conference took place on 27th April 2006 at the premises of BUT Pod Palackého vrchem. After the opening ceremony, students of the FIT Master’s study programme and Ph.D. students defended their work in the following specializations: Information systems, Graphics and Multimedia, Computer systems, and Intelligent systems.

The evaluation committees were formed by academics, sponsors, and representatives of the Student Union. After presentations the committees chose the best contributions and suggested the financial reward for the individual authors. Thus the professional level of the work, attractiveness for industry and students’ viewpoint were encompassed. There were 16 competitors from the Bachelor’s study programme, 34 students of the Master’s study programme, and 28 doctoral students of the FIT present. All contributions were successfully reviewed and published in a shortened version in the Conference Proceedings. The electronic version of the proceedings can be found on the Internet and CDs.

After all committees had completed their work, a final ceremony took place in which all sponsoring companies together with the Vice-Deans for Research Prof. Ing. Zbyněk Raida, CSc. and Prof. RNDr. Milan Češka, CSc., awarded the prizes to the winners.

We hope that these students' competitions will continue in the future, as they bring unique motivation for students’ creativity work.

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

RNDr. Jitka Kreslíková, CSc.
II.3. International Relations

International activities at the FIT are dealt with by the following group: the Vice-Dean Prof. Ing. Jan M. Honzík, CSc., Mrs. Michaela Studená, the assistant for public relations, and Doc. Dr. Ing. P. Zemčík, a teacher with considerable international experience. International activities are focused on support of international mobility of both students and teachers, on organizing and offering tuition to foreign students who pay their tuition fees and on information and consultation services. In 2006, there were bilateral agreements between the faculty and 25 foreign universities in the framework of Socrates/Erasmus Programme, which enabled 42 FIT students to spend some time at study stays abroad and 33 students from foreign partner institutions to study at the FIT.

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

The following table lists foreign partners who had active bilateral agreements with the FIT within the framework of Socrates/Erasmus.

<table>
<thead>
<tr>
<th>Country</th>
<th>University</th>
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<td><a href="http://www.ouc.dk">www.ouc.dk</a></td>
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<td>F NOISY02</td>
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<td>Universite la Rochelle</td>
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### Student mobilities at the FIT in 2006 - ERASMUS and others

#### Incoming students:

<table>
<thead>
<tr>
<th>Name</th>
<th>Stay</th>
<th>University</th>
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<tr>
<td>Ahmet BUYURAN</td>
<td>1/2006 - 6/2006</td>
<td>Turkey, Yildiz Technical University</td>
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<tr>
<td>Alper Taha YUCE</td>
<td>1/2006 - 7/2006</td>
<td>Turkey, Yildiz Technical University</td>
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<tr>
<td>José LORENZO ESCUDERO</td>
<td>1/2006 - 5/2006</td>
<td>Spain, UPM Madrid</td>
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<tr>
<td>Joao TAVARES SILVA</td>
<td>1/2006 - 1/2006</td>
<td>Portugal, UTAD</td>
</tr>
<tr>
<td>Samuel Freire ALVES</td>
<td>1/2006 - 6/2006</td>
<td>Portugal, UTAD</td>
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<tr>
<td>Amaro ANTUNES</td>
<td>1/2006 - 6/2006</td>
<td>Portugal, UTAD</td>
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<tr>
<td>Rui Miguel Lamas ALFERES</td>
<td>1/2006 - 6/2006</td>
<td>Portugal, UTAD</td>
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<tr>
<td>Martin MACKO</td>
<td>2/2006 - 6/2006</td>
<td>Slovakia, FIIT Bratislava</td>
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<tr>
<td>Ivan GÁL</td>
<td>2/2006 - 6/2006</td>
<td>Slovakia, FIIT Bratislava</td>
</tr>
<tr>
<td>Vladimir HUDEC</td>
<td>2/2006 - 6/2006</td>
<td>Slovakia, FIIT Bratislava</td>
</tr>
<tr>
<td>Pertti KOKKONEN</td>
<td>1/2006 - 6/2006</td>
<td>Finland, University of Kuopio</td>
</tr>
<tr>
<td>Alejandro Giralda RODRÍGUEZ</td>
<td>2/2006 - 8/2006</td>
<td>Spain, Universidad de Valladolid</td>
</tr>
<tr>
<td>Ignacio Fernández-Dívar ESCACHO</td>
<td>2/2006 - 8/2006</td>
<td>Spain, Universidad de Valladolid</td>
</tr>
<tr>
<td>Nikolaos MANTZARAKIS</td>
<td>2/2006 - 6/2006</td>
<td>Greece, TEI of Crete</td>
</tr>
<tr>
<td>Aysegul MUT</td>
<td>9/2006 - 12/2006</td>
<td>Turkey, Yildiz Technical University</td>
</tr>
<tr>
<td>Fadime AYDIN</td>
<td>9/2006 - 12/2006</td>
<td>Turkey, Yildiz Technical University</td>
</tr>
<tr>
<td>Deniz ACILAN</td>
<td>9/2006 - 12/2006</td>
<td>Turkey, Yildiz Technical University</td>
</tr>
<tr>
<td>Stefan SIEBEL</td>
<td>9/2006 - 12/2006</td>
<td>Germany, Universität Siegen</td>
</tr>
<tr>
<td>Jorge BARRACHINA</td>
<td>9/2006 - 12/2006</td>
<td>Spain, UPM Madrid</td>
</tr>
<tr>
<td>Iria Gonzalez HURTADO</td>
<td>9/2006 - 12/2006</td>
<td>Spain, UPM Madrid</td>
</tr>
<tr>
<td>Jaime Herrera RIAZA</td>
<td>9/2006 - 12/2006</td>
<td>Spain, UPM Madrid</td>
</tr>
<tr>
<td>Peter STANOVSÝK</td>
<td>9/2006 - 12/2006</td>
<td>Slovakia, FIIT Bratislava</td>
</tr>
<tr>
<td>Ilya OPARIN</td>
<td>10/2006 - 12/2006</td>
<td>University of West Bohemia, Plzeň</td>
</tr>
<tr>
<td>Ivan BUDNYK</td>
<td>2/2006 - 12/2006</td>
<td>the Ukraine, Kyiv-Mohyla Academy (Visegrad scholarship)</td>
</tr>
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Unlabelled stays: stays within the Socrates/Erasmus programme
### Outgoing students:

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<tr>
<th>Jméno studenta</th>
<th>Doba pobytu</th>
<th>Univerzita</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petr Blahák</td>
<td>1/2006 – 2/2006</td>
<td>Greece, TEI of Crete</td>
</tr>
<tr>
<td>Michal Butek</td>
<td>1/2006 – 1/2006</td>
<td>France, ESIEE Amiens</td>
</tr>
<tr>
<td>Radek Hlaváček</td>
<td>1/2006 – 3/2006</td>
<td>Germany, Universität Siegen</td>
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<tr>
<td>Matej Konečný</td>
<td>1/2006 – 5/2006</td>
<td>Finland, Helsinki University of Technology</td>
</tr>
<tr>
<td>Miroslav Kovař</td>
<td>1/2006 – 2/2006</td>
<td>Austria, Graz University of Technology</td>
</tr>
<tr>
<td>Aleš Kovářik</td>
<td>1/2006 – 5/2006</td>
<td>Finland, Helsinki University of Technology</td>
</tr>
<tr>
<td>Zdeněk Letko</td>
<td>1/2006 – 5/2006</td>
<td>Finland, Lappeenranta University of Technology</td>
</tr>
<tr>
<td>Petr Pokorný</td>
<td>1/2006 – 6/2006</td>
<td>Great Britain, University of Bristol</td>
</tr>
<tr>
<td>Peter Trebula</td>
<td>1/2006 – 6/2006</td>
<td>Denmark, Odense University College of Engineering</td>
</tr>
<tr>
<td>Tomáš Dvořák</td>
<td>1/2006 – 5/2006</td>
<td>Great Britain, University of Surrey</td>
</tr>
<tr>
<td>Tomáš Sychra</td>
<td>1/2006 – 6/2006</td>
<td>Great Britain, University of Bristol</td>
</tr>
<tr>
<td>Michal Butela</td>
<td>1/2006 – 6/2006</td>
<td>Denmark, Odense University College of Engineering</td>
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<tr>
<td>Martin Pařenica</td>
<td>1/2006 – 6/2006</td>
<td>Denmark, Odense University College of Engineering</td>
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<tr>
<td>Ondřej Viceník</td>
<td>2/2006 – 6/2006</td>
<td>Denmark, Odense University College of Engineering</td>
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<td>Miroslav Zámečník</td>
<td>2/2006 – 6/2006</td>
<td>Spain, Universidad de Valladolid</td>
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<td>Pavel Hendrych</td>
<td>2/2006 – 7/2006</td>
<td>Austria, TU Graz</td>
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<tr>
<td>Michal Čáp</td>
<td>9/2006 – 12/2006</td>
<td>Great Britain, Coventry</td>
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<tr>
<td>Ondřej HAMPL</td>
<td>9/2006 – 12/2006</td>
<td>Germany, Fachhochschule Wiesbaden</td>
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<tr>
<td>Vít Kučera</td>
<td>8/2006 – 12/2006</td>
<td>Finland, University of Joensuu</td>
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<tr>
<td>Ondřej Kučera</td>
<td>9/2006 – 12/2006</td>
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<td>Michal Lichvár</td>
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<td>Tomáš Obrátil</td>
<td>8/2006 – 12/2006</td>
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<td>Martin Pražák</td>
<td>10/2006 – 12/2006</td>
<td>Great Britain, University of Bristol</td>
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<td>Filip Šuba</td>
<td>9/2006 – 12/2006</td>
<td>Finland, Helsinki University of Technology</td>
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<td>Jiří Techet</td>
<td>9/2006 – 12/2006</td>
<td>Spain, Universidad de Valladolid</td>
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<tr>
<td>Radovan Tůma</td>
<td>9/2006 – 12/2006</td>
<td>Greece, University of Crete</td>
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<tr>
<td>Tomáš Vítek</td>
<td>8/2006 – 12/2006</td>
<td>Denmark, University of Southern Denmark</td>
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<tr>
<td>Jan Zahradník</td>
<td>8/2006 – 12/2006</td>
<td>Finland, Lappeenranta University of Technology</td>
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<tr>
<td>Pavel Očenášek</td>
<td>6/2006 – 9/2006</td>
<td>USA, University of Missouri - St.Louis (RP MSMT)</td>
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<tr>
<td>Peter Trebula</td>
<td>6/2006 – 11/2006</td>
<td>Denmark, University of Southern Denmark (RP MSMT)</td>
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<tr>
<td>Name</td>
<td>Dates</td>
<td>Location/Institution</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>Milan Pavliček</td>
<td>8/2006 – 12/2006</td>
<td>Denmark, University of Southern Denmark (RP MSMT)</td>
</tr>
</tbody>
</table>

Unlabelled stays: financed within Socrates/Erasmus, MSMT ČR (Ministry of Education, Czech Republic) and the BUT mobility fund.

Vice-Dean, Public Relations
II.4. Lifelong Education

Doc. Ing. Jiří Kunovský, CSc., again contributed to the programme of the Third Age University (U3V) by giving lectures on “Digital photography and computer graphics“. Based on the experience from the previous academic year and based on the large amount of senior students interested in his lectures, Doc. Ing. Jiří Kunovský, CSc., offered “Digital photography and computer graphics“ in two separate lecture groups.

The last stage of the MSMT integrated project “Preparation of the Distance and Combined Forms of Study at Brno University of Technology“ was worked on. Study materials created within this project are focused on e-learning and computer-aided teaching technologies and can form part of knowledge database that is going to serve all FIT students since the next academic year.

Ing. Martinek from the FIT provided all-year tuition of “Selected Parts of Informatics” for the secondary school in Videňská Street, Brno. It took place in the FIT Computer Centre once a week and offered the following topics of computer science: programming and independent work on projects, especially in C language, operating systems – fundamentals of Unix/Linux systems (basics of control, script programming), and work with the Internet, (information retrieval).

Within the Government Policy on IT in Education, the FIT organized several training courses in close co-operation with ApS Brno s.r.o. such as advanced courses for teachers of elementary and secondary schools, predominantly in the region of Ivančice. A total of 70 teachers were trained. Some of them were awarded the highest certificate for having completed all compulsory and optional courses of P modules of SIPVZ.

In 2005/06, the capacity of optional courses on Microsoft technologies was raised again. These are unique courses which prepare students for future professional life. Microsoft technologies were chosen with regard to their direct applicability in practical life, with regard to the fact that the above-mentioned technologies cover a considerable part of the market in the area of server and development tools. Each of the five courses prepares students for an international examination and for receiving the renowned MCP certificate (Microsoft Certified Professional). More than fifty FIT students were awarded the MCP certificate last year. The courses are provided with the help of Microsoft IT Academy, whose member the Faculty of Information Technology has been for many years and in the highest category.

Vice-Dean, Public Relations
II.5. Dislocation, Modernization, and Faculty Development in 2006

In 2006, the managements of BUT and FIT concentrated on the strategic investment intention of dislocation and stabilization of the FIT in Božetěchova 2 and Božetěchova 1 premises. A special attention was paid to realization of the first stage of the completion of construction and re-construction of Božetěchova 1 premises so that it might be put into operation in the middle of 2006 at the latest.

The opening ceremony was held on 19th September 2006 in attendance of representatives of the Ministry of Education of the Czech Republic, of the region, of Brno, and representatives of universities. In summer, the whole faculty moved to the buildings that had been completed in the first stage and the second stage - the reconstruction and completion of Carthusian monastery - started. The second stage is supposed to be ready by the beginning of the 2007/2008 academic year. The original investment programme was amended by two other investment intentions which deal with the reconstruction of the refectory including its static security and including the supply of active elements, enlargement of the access path and the mobile interior. Moreover it was enlarged by the reconstruction of the northern seclusion. For the time being, the former small castle in Božetěchova 1 premises and the indoor and outdoor sports fields have not been included into the reconstruction due to lack of finance. The approved investments are being carried out together with the second stage of the Božetěchova area reconstruction, which should be completed by mid-2007. Both premises were successfully linked by a bridge and the building permit was administered.

The operating documentation of the second stage of the faculty development was completed and a separate project on the mobile interior as a source material for public tender was made.

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

Ing. Zdeněk Bouša
Vice-Dean, Campus Development
II.6. Library at the FIT

In 2006, the library aimed at providing high-quality library and information service – loans, reference service, on-line service, and international loan service - and thus supporting the study and research activities at the faculty.

The acquisition activities based on requirements of academic staff and students resulted in a total of 1136 new library items. The library stock of the faculty was thus enlarged up to 9500 library items. The library took 47 foreign and Czech journals.

In 2006, more than 4700 loans from the FIT library collection were registered. 70 items were provided to the FIT employees through international loan service and 35 items through inter-library lending. In 2006, the opening hours of the library and study room were 43 hours a week.

In 2006, a better version of the library system Aleph 16 was introduced. Now the users can follow their loans on-line, prolong them, and book library items without visiting the library.

The first year students attended lectures where they were informed about the basic library terminology and also introduced to the services of the FIT Library and other libraries at BUT.

A lot of sales exhibitions of computer literature were organized in 2006. Apart from collaboration with Zoner Press, BEN – technical literature, another new collaboration started - with Computer press, a.s. and Mafra, a.s., which granted free journals and periodicals to our students.

In August 2006, the library temporarily moved into the new faculty building at 1, Božetěchova Str. Since then, reconstruction of the library in the area of the historical monastery has been going on.

<table>
<thead>
<tr>
<th>Finance for purchase of books in 2006 (in CZK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Czech books</td>
</tr>
<tr>
<td>Foreign books</td>
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<tr>
<td>Financed from grants</td>
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<tr>
<td>Total</td>
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</table>

<table>
<thead>
<tr>
<th>Finance for purchase of periodicals in 2006 (in CZK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Czech periodicals</td>
</tr>
<tr>
<td>Foreign periodicals</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Loans in 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of registered loans</td>
</tr>
<tr>
<td>Number of inter-library and international inter-library loans</td>
</tr>
</tbody>
</table>

Mgr. Barbora Selingerová
Head of the Library
II.7. Annual Report - the Academic Senate of the FIT BUT in 2006

In 2006, the Academic Senate comprised:

Ing. Petr Lampa  
Bc. Zdeněk Letko  
Chairman  
Vice-Chairman and  
Chairman of the Chamber of the Academic Staff  
Vice-Chairman and  
Chairman of the Student Chamber

Chamber of Academic Staff

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

Student Chamber

Ing. Vítězslav Beran (Ph.D. programme IT)  
Jan Filip (Bachelor’s programme IT, since 22nd June 2006)  
Bc. Michal Hejč (follow-up Master’s programme MIN)  
Jaroslav Kapoun (Master’s programme EI, CSE specialization, till 13th June 2006)  
Bc. Zdeněk Letko (follow-up Master’s programme MIS)  
Jana Melicheríková (Master’s programme EI, CSE specialization, till 13th June 2006)  
Jan Richter (Bachelor’s programme IT, since 7th November 2006)

AS FIT Committees

Legislative Committee

Ing. Vítězslav Beran  
Bc. Michal Hejč  
Ing. Bohuslav Krčena, Ph.D. – Chairman  
Doc. Ing. Jiří Kunovský, CSc

Economic Committee

Dr. Ing. Otto Fučík  
Ing. Petr Lampa – Chairman  
Ing. Tomáš Vojnar, Ph.D.  
Ing. Vítězslav Beran  
Jana Melicheríková (till 13th June 2006)  
Bc. Zdeněk Letko (since 22nd June 2006)
Activities of the AS FIT

The Academic Senate gathered at eight regular meetings in 2006 with an average attendance of 91%. All meetings had a quorum.

In the legislative section the Academic Senate (AS) focused on discussing and approving proposals of amendments to the internal regulations and standards which were provoked by the supplementary bill on Higher education and the consequent amendments to the internal regulations of BUT. The amendment proposals referred to the Electoral Rules and Rules of Procedure of the AS FIT and the Disciplinary Rules of the FIT.

The approval procedure has not been completed in either case. New Dean’s Regulations forming a Supplement to the BUT Scholarship Regulations and the FIT Dean’s Regulation to the BUT Rules for Studies and Examinations were agreed on. In the former, the most distinctive change was admitting claims for scholarships by semesters, in the latter, regulation related to the organization of examinations, completion of study, subject documentation, subject recognition, etc. were refined.

In the economic field the AS agreed on buying two cars and thus enlarging the faculty fleet. The Academic Senate also agreed on the annual report on financial management of the FIT in 2005 and the budget proposal for 2006. In its meetings in October and December, the senate discussed the drawing of the FIT funds in 2006 and agreed on the division of financial reserves. Principles of drawing funds in the period of provisional budget were set in collaboration with the faculty management.

The Academic Senate also discussed and approved the Annual Report on the Activities of the FIT in 2005 and the Long-term intention of scientific, research, development, educational and other creative activities at the FIT BUT in 2006 to 2010. The Dean’s suggestion regarding the Disciplinary Commission was also agreed on.

As two members of the AS FIT graduated, the necessity of by-election for the Student Chamber of the AS FIT arose. The election was done electronically for the first time and proved successful.

The Legislative Committee of the AS FIT met twice (on 31st January and 7th November 2006) and discussed all proposals of amendments to the FIT internal regulations and standards (see above) at the meetings or electronically. The Economic Committee of the AS FIT met once to deal with the budget proposal for 2006.

Ing. Bohuslav Křeša, Ph.D., was the FIT Deputy in the Czech Council of Higher Education. In 2006 he took part in the activities of the expert committee for science and the expert committee for IT in Higher Education.

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.

Chairman of the AS FIT
II. 8. Student Organizations

The Student Chamber of the Academic Senate of the FIT represents the students of the FIT, is elected by the academic staff and closely co-operates with the Student Union of the FIT.

The Student Union of the FIT is an interest group of the students at the faculty. It is here to inform students about important activities and events at the FIT, and about all that is important for their successful study and life in Brno. It contributes to various events of the FIT or BUT.

Activities of the Student Chamber of the Academic Senate (SCAS) of the FIT in 2006

Student senators regularly attended meetings of the AS of the FIT. They participated in the Economic and Legislative Committees of the Senate.

Activities of the Student Union (SU) FIT in 2006

The members of the SU participated in the FIT Open Day, organized their own ball, and contributed to the organization of the joint ball of the FIT and FEEC. They also helped to promote the faculty at the international trade fair of higher education called Gaudeamus. They also visited some secondary schools to inform secondary school students about possibilities of studying at the FIT.

The members of the SU helped to promote various faculty events, such as: lectures given by Seznam.cz company, promotion of LogicaCMG company, or the Linuxalt weekend full of lectures.

For the fourth time, the SU prepared a brochure containing useful information on the study start-up for the first-year students.

The SU also contributed to the organization of Majáles and provided several lectures for the first-year students to inform them about the start of the study at the faculty.

Martin Gazda
Chairman of the SU FIT
III. DEPARTMENTS AT THE FIT BUT IN 2006

III.1. Department of Information Systems

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

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

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

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

Staff

Head of Department
Zendulka Jaroslav, Doc. Ing., CSc.

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

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

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

Assistant professor
Bartík Vladimír, Ing., Ph.D.
Burget Radek, Ing., Ph.D.
Kreslíková Jitka, RNDr., CSc.
Lukáš Roman, Ing., Ph.D.
Equipment

A new laboratory of advanced communication technologies was built at the FIT supported by the Higher Education Development Fund. In it, students can use equipment for building classical data transmission nets, such as Ethernet (Gigabit Ethernet, 10G Ethernet), WiFi, and technologies for telecommunication transmissions, such as xDSL and ISDN. Besides 20 student workstations, the laboratory also contains a switchboard with active network elements (Cisco switches and routers), IP DSLAM, Access Server, DSL modems for DSL connection, ISDN AdTRAN exchange, which together with ISDN BRI modules in Cisco routers enables to make ISDN dial-up access. The lab is separated from the faculty computer network and enables students to link and configure standard network services, too. With its technical equipment the lab supports tuition in specialized courses within Cisco Network Academy programme, which was implemented as part of Bachelor Study programme at the FIT. The equipment also serves practical training in the Computer Systems and Network courses of the Master Study programme.

Tuition

<table>
<thead>
<tr>
<th>Abbr.</th>
<th>Course</th>
<th>Sem</th>
<th>Cr.</th>
<th>Hours</th>
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<tbody>
<tr>
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<td>Type</td>
<td>Credits</td>
<td>Code</td>
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<tr>
<td>DSKP</td>
<td>Data Warehouses (for FBM)</td>
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<tr>
<td>MW1</td>
<td>Microsoft Windows Desktop Systems</td>
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<td>Kolář Dušan, Doc. Dr. Ing.</td>
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<td>Internet Applications</td>
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<td>Hruška Tomáš, Prof. Ing., CSc.</td>
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</table>

Kurečka Radomír, Ing.  
Zendulka Jaroslav, Doc. Ing., CSc.  
Švéda Miroslav, Prof. Ing., CSc.  
Švéda Miroslav, Prof. Ing., CSc.  
Matoušek Petr, Ing., Ph.D.  
Kreslíková Jitka, RNDr., CSc.  
Kreslíková Jitka, RNDr., CSc.  
Kreslíková Jitka, RNDr., CSc.  
Honzík Jan M., Prof. Ing., CSc.  
Švéda Miroslav, Prof. Ing., CSc.  
Švéda Miroslav, Prof. Ing., CSc.  
Hruška Tomáš, Prof. Ing., CSc.  
Burget Radek, Ing., Ph.D.  
Burget Radek, Ing., Ph.D.  
Burget Radek, Ing., Ph.D.  
Matoušek Petr, Ing., Ph.D.  
Matoušek Petr, Ing., Ph.D.  
Honzík Jan M., Prof. Ing., CSc.
Research Projects

Bioinformatics and Knowledge Discovery in Biological Databases, FRVŠ MSMT, FR3064/2006/G1, 2006, running
Research leader: Rudolfová Ivana
Team leader: Zendulka Jaroslav

Didactic Demonstration of Formal Language Models, FRVŠ MSMT, FR1909/2006/G1, 2006, running
Research leader: Křivka Zbyněk
Team leaders: Lukáš Roman, Meduna Alexander

Identification and analysis of relations of process and project management in SW product development and their influence on quality management, FRVŠ MSMT, FR2557/2006/G1, 2006, running
Research leader: Martinek Zdeněk
Team leader: Kresliková Jitka

Research leader: Kurečka Radomír
Team leader: Hruška Tomáš

Laboratory of Advanced Communication Technologies, FRVŠ MSMT, FR2622/2006/A, 2006, completed
Research leader: Švéda Miroslav
Team leaders: Matoušek Petr, Ščuglík František

Ontologies and Semantic Web, FRVŠ MSMT, FR2877/2006/G1, 2006, running
Research leader: Očenášek Pavel
Team leader: Hruška Tomáš

Development of Structured and Modular Study Programmes, RP MSMT, 2006, completed
Research leader: Honzík Jan M.
Internationalisation – Preparatory Phase for the European Joint Degree, RP MSMT, 2006, running  
**Research leader:** Honzík Jan M.  
**Team leader:** Zemčík Pavel

**Research leader:** Švéda Miroslav  
**Team leader:** Ryšavý Ondřej

**Research leader:** Honzík Jan M.

Research and application of systems for large data analysis and decision support, MPO ČR, FT-TA3/162, 2006-2010, running  
**Research leader:** Máčel Michal  
**Team leader:** Hruška Tomáš

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

**Research leader:** Matoušek Petr  
**Team leaders:** Čejka Rudolf, Ščuglík František

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

Integrated Approach to Education of DSP Students in the Field of Parallel and Distributed Systems  
**Research leader:** Gruska Jozef  
**Team leader:** Češka Milan

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

Information System Security– Research of Attacks on Tamper-Resistant Cryptographic Hardware, GACR, GA 102/04/0871, 2004-2006, running
Research leader: Hanáček Petr
Team leaders: Cvrček Daniel, Hrubý Martin, Hruška Tomáš, Peringer Petr, Rábóvá Zdeňka

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

Optical Network in National Research and its New Applications - Programmable Hardware, CESNET, MSM6383917201, 2004-2010, running
Research leader: Novotný Jiří
Spoluřešitelé: Čejka Rudolf, Fučík Otto, Kořenecký Martin, Martinek Tomáš, Matoušek Petr, Pečenka Tomáš, Smrčka Aleš, Vojnar Tomáš, Zemčík Pavel

Optimally Integrated Models of Modern Information Technologies, GAČR, GA201/04/0441, 2004-2006, running
Research leader: Meduna Alexander
Team leader: Kolář Dušan

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

Research Project in Interactive Media, GACR, GA408/04/1370, 2004-2006, running
Research leader: Gajdoš Július
Team leader: Zendulka Jaroslav

Research leader: Opršal Zdeněk
Team leaders: Kreslíková Jitka, Zendulka Jaroslav

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

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

Co-operation the Czech Republic

- Application Software, s.r.o.- RNDr. Lubomír Ptáček, co-operation in education and courses for the FIT, [http://www.pocitacoveskoleni.cz](http://www.pocitacoveskoleni.cz)
- Faculty of Informatics, Masaryk University Brno, Ing. Matej Lexa, Ph.D. - co-operation in the field of bioinformatics, [http://www.fi.muni.cz/](http://www.fi.muni.cz/)
- STAVCERT, s.r.o. Praha, Ing. Jiřina Štěpánská, chief auditor QMS, EMS, co-operation in the field of quality assessing of the process of the development of information systems with the aim of the system certification for quality management, [http://www.stavcert.cz](http://www.stavcert.cz)
- Department of Theatre and Interactive Media Studies, Masaryk University, Faculty of Arts, Prof. PhDr. Július Gajdoš, Ph.D. – joint grant project "Research in Interactive Media, GACR, GA408/04/1370", [http://www.phil.muni.cz/udim/](http://www.phil.muni.cz/udim/)
- Cisco Network Academy, Karol Kniewald – co-operation in the implememtation of CCNA courses into the programme of tuition, [http://cisco.netacad.net](http://cisco.netacad.net)
- Profinit, s.r.o., M. Franc – co-operation, the ‘Thesis of the Year’ competition and specialized lectures, [http://www.profinit.cz](http://www.profinit.cz)
- ANF DATA, s.r.o., local affiliate in Brno, Ing. Petr Šebesta, diploma theses – topics and consultations, [http://www.anfdata.cz](http://www.anfdata.cz)
- LBMS, s.r.o. Praha, František Solar, Strategic Account Manager, co-operation in the field of process management and application for the support of process management, [http://www.lbms.cz](http://www.lbms.cz)
- ICZ a.s., Ing. Miroslav Rybníček, co-operation in the field of project managment and application for the support of process management, [http://www.i.cz/](http://www.i.cz/)
International Co-operation

- Embry Riddle Aeronautical University, Daytona Beach, Florida, USA, Prof. Andrew Kornecki, co-operation in the field of embedded systems: ATLANTIS-ILERT, http://www.erau.edu.
- AGH University of Science and Technology, Krakow, Poland, Prof. Wojciech Grega - co-operation in the field of embedded systems: ATLANTIS-ILERT, http://aq.ia.agh.edu.pl.

Visits of Staff Members to Foreign Institutions

- Honzík Jan M., Prof. Ing., CSc., European Comission EU- Education and Training, EC EU, Brusel, BE, 8 days, a study stay
- Hruška Tomáš, Prof. Ing., CSc., University of Birmingham, UNIB, Edgbaston, B15 2TT Birmingham, GB, +44 121 414 3344, GB, 14 days, a study stay
- Masopust Tomáš, Mgr., Universidad de Valladolid, UVA, Plaza de Santa Cruz 8, 47002 Valladolid, ES, +34 983 42 32 33, ES, 9 days, a study stay
- Matoušek Petr, Ing., Ph.D., Verification of Protocols for Security and Mobility, Copenhagen, DK, 6 days, a study stay
- Meduna Alexander, Prof. RNDr., CSc., Kyoto Sangyo University, Kyoto Sangyo University, JP, 2 months, – a research stay
- Meduna Alexander, Prof. RNDr., CSc., Universidad de Valladolid, Valladolid, Spain, ES, 8 days, a series of invited lectures,
- Meduna Alexander, Prof. RNDr., CSc., University of Milan, Italy, IT, 8 days, a series of invited lectures
- Očenášek Pavel, Ing., Katholieke Universiteit Leuven, KU Leuven, BE, 29 days, – a research stay
- Očenášek Pavel, Ing., University of Missouri - St. Louis Math and Computer Science Department, UMSL Missouri, 8001 Natural Bridge Rd., MO 63121 St. Louis, US, 3 months – a research stay
- Švéda Miroslav, Prof. Ing., CSc., IEEE Computer Society, Miami, Florida, US, 10 days, request consultations
- Techet Jiří, Ing., Universidad de Valladolid, UVA, Plaza de Santa Cruz 8, 47002 Valladolid, ES, +34 983 42 32 33, ES, 4 months, a study stay

Agreements

- Agreement on Professional Aid, STAVCERT Praha, Ltd.
- A Bi-lateral Agreement on Student and Teacher Mobilities within the Socrates/Erasmus Programme made with La Universidad de Valladolid, http://www.uva.es/, ES
- An Agreement on Alignment of the FIT to the CNA programme (co-operation with UO Brno) 2004 - .
- An Agreement with Vema a.s., 2002 -.
- An Agreement with Profinit, s.ro., 2006 -.
Memberships in International Organizations and Societies

- Honzík Jan M., Prof. Ing., CSc.,
  - IGIP
  - IFIP
  - EUA-ECTS/DS National Coordinator
  - Member of the National Team of Bologna Promoters,
- Hruška Tomáš, Prof. Ing., CSc.,
  - ACM (thruska@acm.org)
  - Czech and Slovak Simulation Society (CSSS)
- Kolář Dušan, Doc. Dr. Ing.,
  - ACM
- Očenášek Pavel, Ing.,
  - IEEE Computer Society
  - ACM
- Ryšavý Ondřej, Ing., Ph.D.,
  - IEEE Computer Society
- Šeglík František, Ing.,
  - IEEE Computer Society
- Švéda Miroslav, Prof. Ing., CSc.,
  - IEEE Computer Society
  - IEEE Technical Committee on Engineering of Computer-Based Systems (ECBS)
  - IFIP WG10.1
- Zendulka Jaroslav, Doc. Ing., CSc.,
  - ACM

Publications

Journal Articles:


Matoušek, P.: Dobrýho nespálí. Test firewallů pro sítě do 150 uživatelů (Test of Hardware Firewalls for Small Networks), In: CONNECT!, Vol. 2006, No. 6, Brno, CZ, pp. 26-29, ISSN 1211-3085


Conference Proceedings:


Conference Papers:


46


Research Projects:


Ryšavý, O.: Inheritance of specifications in the calculus of functional objects, Brno, CZ, FIT BUT, 2006, p. 15


Presentations, el.documents:

Matoušek, P.: Laboratory Assignments for Computer Networking, Brno, CZ, 2006, p. 82

Očenášek, P.: Semantic Web Tutorial, Brno, CZ, 2006, p. 27

Lectures:


Seminars

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<th>Date</th>
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<tr>
<td>13.2.2006</td>
<td>Graphical representation of formal languages - Maria Luisa González Díaz</td>
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<td>20.2.2006</td>
<td>A Reduction of Scattered Context Grammars – A. Meduna, J. Techet, T. Masopust</td>
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<td>27.2.2006</td>
<td>Self-Regulated Finite Automata – T. Masopust</td>
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<td>6.3.2006</td>
<td>Architecture Description Languages – K. Masařík</td>
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<td>13.3.2006</td>
<td>Patterns and Skeletons for Parallel and Distributed Computing – I.Budnyk</td>
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<td>Visual Segmentation of Web Documents – R. Burget</td>
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<td>20.3.2006</td>
<td>Human Tracking Concepts – P. Chmelař</td>
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<td>27.3.2006</td>
<td>A Framework for Systems of Asynchronous Concurrent Processes – M. Rychlý</td>
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### Other Activities

- Organization of the "9th Information Systems Implementation and Modelling" (ISIM 2006), which is an international conference on theory, modelling techniques and tools, methods of information systems design and database systems.

- Doc. Zendulka was a member of the evaluation board in ‘Database Product of 2006’ competition organized by the journal of ‘Database World’ (Databázový svět).

- Prof. Honzík was the chief executive of the evaluation board and Prof. Hruška and Doc. Zendulka were members of the academic part of the evaluation board of the Cristal Disc Competition within Invex 2006, the international trade fair on IT. Dr. Burget was in charge of information support.

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<td>An Introduction to Business Process Modelling - Š. Květoňová</td>
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<td>2.10.2006</td>
<td>An Introduction to the 2006 UIFS seminar – A. Meduna</td>
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<td>9.10.2006</td>
<td>An infinite hierarchy of language families based on the pushdown depth - A. Meduna</td>
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<td>16.10.2006</td>
<td>Rewriting Systems and An Infinite Hierarchy - A. Meduna, R. Schönecker, Z. Křivka</td>
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<td>23.10.2006</td>
<td>Using Knowledge Management in Project Management - Š. Květoňová</td>
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<td>30.10.2006</td>
<td>Self Explaining On-Line Analytical Data Mining - P. Chmelař, L. Stryka</td>
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<td>6.11.2006</td>
<td>Properties of n-Parallel Languages - L. Rychnovský</td>
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<td>Project and process management relationships - Z. Martínek</td>
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<td>Evolutionary Approach in the Security Protocol Design - P. Očenášek</td>
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<td>27.11.2006</td>
<td>Verification of RT systems described using UML - J. Ráb, An introduction to FP7 – O. Ryšavý</td>
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<td>18.12.2006</td>
<td>Kurt Goedel - his significance for philosophy and informatics - B. Švandová</td>
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III.2. Department of Intelligent Systems

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

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

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

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

Staff

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

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

Professor
Češka Milan, Prof. RNDr., CSc.

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

Assistant professor
Drahanský Martin, Ing., Dipl.-Ing., Ph.D.
Hrubý Martin, Ing., Ph.D.
Janoušek Vladimir, Ing., Ph.D.
Kočí Radek, Ing., Ph.D.
Křena Bohuslav, Ing., Ph.D.
Marek Vladimir, Ing.
Orság Filip, Ing., Ph.D.
Peringer Petr, Dr. Ing.
Vojnar Tomáš, Ing., Ph.D.
Zbořil František, Ing., Ph.D.
Assistant lecturer
Kumpošt Marek, Mgr.
Martinek David, Ing.
Smrčka Aleš, Ing.

Ph.D. student
Cerhák Michal, Ing.
Erlebach Pavel, Ing.
Grulich Lukáš, Ing.
Holík Lukáš, Mgr.
Jurka Pavel, Ing.
Kironský Előd, Ing.
Kluz Marek, Mgr.
Konvalina Jiří, Ing.
Kraus Michal, Ing.
Malinka Kamil, Mgr.
Mazal Zdeněk, Ing.
Novosad Petr, Ing.
Pecho Peter, Ing.
Pindryč Milan, Ing.
Polášek Petr, Ing.
Rogalewicz Adam, Mgr.
Rozman Jaroslav, Ing.
Samek Jan, Ing.
Schäfer Jiří, Ing.
Skřivánek Roman, Ing.
Šátek Václav, Ing.
Turakhodjaeva Nasibakhon, Ing.
Vintera Jiří, Ing.

Equipment

Laboratory of robots and biometric systems:
- Robot Trilobot (11 pieces)
- Logitech web cameras (10 pieces)
- Robot Robosapien (2 pieces)
- a battery charger for robots
- SkyTale chip card reader
- Fingerprint Scanners
  - Bergdata FCAT 100 (thermal)
  - Hamster SecuGen II. (optical)
  - Suprema SFM 3000 (E-Field)
  - Suprema SFM 3010 (thermal)
  - Suprema SFM 3020 (optical)
  - Suprema SFM 3050 (capacitive)
  - Suprema SFR 300 (optical)
  - Veridicom 5th Sense PRL (capacitive)
- AGA Thermovision 110 thermocamera
- Videre Design stereocamera, STH-MDCS2-VARX-C
- HeadSet Genius HS-02N (10 pieces)
• PLC – Samson 6411 control unit
• Rosemount pressure sensor for explosive environment
• CO + LPG detector
• KTY91-222 resistance thermal sensor
• Pt100 resistance thermal sensor
• Siemens inductive position transducer
• Photoresistor + photodiode
• FSR pressure sensors + depression sensor
• SDK Bergdata 2004
• SDK Suprema UniFinger
• SDK Veridicom Protector Suite v3.5.1
• Eagle 4.1 Light
• a soldering set for SMD

BUSlab:

• OfficePro 5000D midi computer (8 pieces)
• Server BUSLab
• Belkin Gigabit switch, 8 ports,
• Asus WL-500g 54Mbit AP/KL/Router/Br/Switch
• BENQ BP2250 data projector
• RouterBOARD RB535
• RouterBOARD RB112 1xLAN
• External HDD WD NetCenter 250GB+LAN 3.5"
• GemPC410-SL reader (5 pieces)
• GemPC430 v.1.4 reader (5 pieces)
• Omnikey Cardman 4000 reader - PCMCIA reader
• GemProx-P2, contactless card reader
• GemProx-C2, contactless card reader
• AMC DV103003 - development kit (RFID)
• GemXPress III development equipment
• SCSATMOD 4 board
• Scopemeter Fluke 123S
• F123S portable measuring kit
• DF5305 0-50V/0-5A – a laboratory power source
• APC Smart-UPS 1500 VA
• Micro-soldering iron with an advanced stabilization of tip temperature

The Department uses the equipment of the Computer Centre

Tuition

<table>
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<tr>
<th>Abbr.</th>
<th>Course</th>
<th>Sem Cr. Hours</th>
<th>Lecturer</th>
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<tr>
<td>AGS</td>
<td>Agent and Multiagent Systems</td>
<td>W 5</td>
<td>Zbořil František V., Doc. Ing., CSc.</td>
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<td>S 5</td>
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<td>Theory and Applications of Petri Nets</td>
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<td>ITY</td>
<td>Typography and Publishing</td>
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<td>Higly Sophisticated Computations</td>
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</table>

**Research Projects**

**Formal Verification of Programs Working with Dynamic Data Structures**, FRVŠ MSMT, FR3101/2006/G1, 2006, running  
**Research leader:** Erlebach Pavel  
**Team leader:** Vojnar Tomáš

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

**Research leader:** Rozman Jaroslav  
**Team leader:** Zbořil František V.

**Computer Classroom for Modelling, Simulation and Geographical Information Systems**, FRVŠ MSMT, FR2656/2006/Ab, 2006, running  
**Research leader:** Peringer Petr  
**Team leaders:** Hrubý Martin, Kunovský Jiří, Vojnar Tomáš
Teaching Support for HW formal verification, FRVŠ MSMT, FR2978/2006/G1, 2006, running
Research leader: Smrčka Aleš
Team leader: Vojnar Tomáš

Teaching Support for the Modelling and Simulation Course, FRVŠ MSMT, FR3097/2006/G1, 2006, running
Research leader: Grulich Lukáš
Team leader: Rábová Zdeňka

Research leader: Křena Bohuslav
Team leaders: Kočí Radek, Vojnar Tomáš, Zbořil František

Vérification automatique de programmes avec structures de données dynamiques a
pointeurs, BARRANDE, 2-06-27, 2006-2007, running
Research leader: Vojnar Tomáš
Team leader: Habermehl Peter

Learning Tool for C/E Petri Nets, FRVŠ MSMT, FR2880/2006/G1, 2006, running
Research leader: Novosad Petr
Team leader: Češka Milan

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

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

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

Automated Methods and Tools Supporting Development of Reliable Parallel and
Distributed Systems, GAČR, GA102/04/0780, 2004-2006, running
Research leader: Češka Milan
Team leaders: Haša Luděk, Janoušek Vladimír, Kočí Radek, Křena Bohuslav, Rábová
Zdeňka, Vojnar Tomáš

Information System Security – research on attacks on tamper-resistant cryptographic
hardware, GAČR, GA102/04/0871, 2004-2006, running
Research leader: Hanáček Petr
Team leaders: Cvrček Daniel, Hrubý Martin, Hruška Tomáš, Peringer Petr, Rábová Zdeňka
Research leader: Hanáček Petr
Team leader: Cvrček Daniel

Research leader: Novotný Jiří
Team leaders: Čejka Rudolf, Fučík Otto, Kořenek Jan, Kršek Přemysl, Martinek Tomáš, Matoušek Petr, Pečenka Tomáš, Smrčka Aleš, Smrž Pavel, Vojnar Tomáš, Zemčík Pavel

Advanced Methods of Automatic Verification of Parametric and Infinite-State Systems, GACR, GP102/03/D211, 2003-2006, completed
Research leader: Vojnar Tomáš
Team leader: Češka Milan

Co-operation

Co-operation in the Czech Republic

- Digitus, s.r.o., Přerov, www.digitus.cz, biometric systems
- E-COM, s.r.o., Slavkov u Brna, www.e-com.cz, graphic simulation tools
- EVPÚ Defence, s.r.o., Uherské Hradiště, www.evpudefence.com, development of image stabilization
- FI MU, Brno, http://www.fi.muni.cz, co-operation in education of doctoral students in the field of parallel and distributed systems within the 102/05/H050 GACR project, and in the research and application of formal verification methods in the Liberouter project
- Grisoft, a.s., www.grisoft.com, co-operation in the field of security.
- Lab-Met, s.r.o., Brno, www.labmet.cz, validation of measuring devices
- Monet+, Zlín, www.monetplus.cz, co-operation in the field of security
- Rutronik, s.r.o., Brno, www.rutronik.cz, support in electrical components development

International Co-operation

- Frauenhofer Gesellschaft, Institut für Graphische Datenverarbeitung, Darmstadt, Germany, biometric systems
• Gesellschaft für Informatik e.V., image-building of our department in the international context


• project https://sysrun.haifa.il.ibm.com/shadows/

• Institut für Informatik, TU München, Germany, http://www4.in.tum.de, co-operation in the research of methods of formal verification of infinite-state systems based on learning regular languages from patterns

• LIAFA, Université Paris 7 – Denis Diderot/CNRS, Paris, France, http://www.liafa.jussieu.fr, co-operation in the research of methods of formal verification of infinite-state systems, e.g. programs with infinite dynamic pointer-based data structures.

• Security Research, Computer Laboratory, University of Cambridge, www.cl.cam.ac.uk, co-operation in the field of security.

• VERIMAG, UJF/INPG/CNRS, Grenoble, France, http://www-verimag.imag.fr, co-operation in the research of methods of formal verification of infinite-state systems, e.g. programs with infinite dynamic pointer-based data structures.

Visitors to the Department

• Prof. Jonathan Billington, University of South Australia, Adelaide, Australia, a lecture on Coloured Petri Net based Distributed Systems Research given at the department, discussion on possible co-operation in the field of verification of infinite-state systems.

• Ing. Milan Goldmann & Ing. Lubomír Stehlíček, Emerson Process Management s.r.o., a lecture for students.

• Dr. Peter Habermehl, LIAFA, Paris, France, two visits dedicated to joint research in the field of verification of infinite-state systems, especially programs with infinite dynamic pointer-based data structures.

• O. Nezhyba, Digitus, s.r.o. a lecture for students.

• Prof. Mauro Pezze, Testing and Analysis Laboratory, DISCo, Universita degli Studi di Milano, Milano, Italy, http://www.lta.disco.unimib.it – a lecturer invited to give a lecture at MEMICS doctoral workshop.

• Dr. Radu Iosif, VERIMAG, Grenoble, France, two visits dedicated to joint research in the field of verification of infinite-state systems, especially programs with infinite dynamic pointer-based data structures.

• Dr. Tayssir Touli, LIAFA, Paris, France, a professional visit focused on joint research on application non-deterministic tree automata for automatic verification of infinite-state systems.

• Dr. Jana Flochova, FIIT, Slovak University of Technology in Bratislava http://www.fei.stuba.sk – a lecturer invited to give lecture: “Design of Model Based Fault Diagnosis Methods“
Visits of Staff Members to Foreign Institutions

- Drahanský Martin, Ing., Dipl. Ing., Ph.D., Universität Siegen, Uni-Siegen, FB12, Hölderlinstr. 3, D-57076, Siegen, DE, 6 days
- Drahanský Martin, Ing., Dipl.-Ing., Ph.D., Technische Universität Wien, TU-Wien, Karlsplatz 13, AT, 1 day
- Drahanský Martin, Ing., Dipl.-Ing., Ph.D., Univerzita Karlova v Praze, UK, Ovocný trh 5, 116 36 Praha 1, CZ, 1 day
- Drahanský Martin, Dipl.-Ing., Ph.D., Fraunhofer Gesellschaft - Institut Graphische Datenverarbeitung, Darmstadt, DE, 3 days
- Hanáček Petr, Doc. Dr. Ing., T-Mobile, Praha, CZ, 1 day
- Krčena Bohuslav, Ing., Ph.D., Galileo Avionica S.p.A., Galileo Avionica, Torino, IT, 3 days
- Krčena Bohuslav, Ing., Ph.D., Universita degli Studi di Milano - Bicocca; Dipartimento di Informatica, Sistemistica e Comunicazione; Laboratorio di Test e Analisi del Software, DISCo, LTA, Piazza dell'Ateneo Nuovo 8, 20126 Milano, IT, 10 days
- Krčena Bohuslav, Ing., Ph.D., IBM Haifa Labs, IBM Research, IBM, IBM Haifa Labs, Haifa University Campus, Mount Carmel, 31905 Haifa, IL, 972-4-8296211, IL, 6 days
- Krčena Bohuslav, Ing., Ph.D., Europe's Information Society, The Helsinki Fair Centre, Messuaukio 1, 00521, Helsinki, FI, 4 days
- Krčena Bohuslav, Ing., Ph.D., Universita degli Studi di Milano - Bicocca; Dipartimento di Informatica, Sistemistica e Comunicazione; Laboratorio di Test e Analisi del Software, DISCo, LTA, Piazza dell'Ateneo Nuovo 8, 20126 Milano, IT, 4 days
- Vojnar Tomáš, Ing., Ph.D., three professional visits dedicated to joint research in the field of verification of infinite-state systems, especially programs with unlimited dynamic data structures based on indicators.
- Vojnar Tomáš, Ing., Ph.D., IBM Haifa Research Laboratories, a professional visit within the Shadows European project – research and development of techniques for automatic error detection and self-healing of programs.
- Zbořil František, Ing., Ph.D., EVPU Defence, s.r.o., Uherské Hradiště, CZ, 1+1 days
- Zbořil František, Ing., Ph.D., Academy of Science CR, Praha, Masarykova kolej, Thakurova 1, CZ, 1 day

Agreements

- EVPÚ Defence, s.r.o., Uherské Hradiště, image stabilization – a project
- Monet+, Zlín, Research, development and implementation of safe client authorization of electronic transactions.

Membership in International Organizations and Societies

- Drahanský Martin, Ing., Dipl.-Ing., Ph.D.,
  - Gesellschaft für Informatik
  - BioAPI Consortium
  - Czech and Slovak Simulation Society
- Hanáček Petr, Doc. Dr. Ing.,
  - CIS (Czech and Slovak Information Society)
  - Czech and Slovak Simulation Society
- Peringer Petr, Dr. Ing.,
  - Czech and Slovak Simulation Society
  - Programme committees of ASIS (CR) and MOSIS (CR) conferences
• Zbořil František V., Doc. Ing., CSc.,
  o Czech and Slovak Simulation Society
  o Programme committees of ASIS (CR) and MOSIS (CR) conferences

Publications

Journal Articles


Conference Papers


Cvrček, D., Danezis, G., Kumpošt, M., Matyáš, V., m.: The Value of Location Information, In: not yet known, Berlin, DM, 2006, pp. 1-4


Hanáček, P., Hrubý, M., Peringer, P., Rábová, Z.: Bakalářský studijní program na VUT FIT (Bachelor Study Programme at the FIT BUT) In: Sborník konference Informatika 2006, Brno, CZ, 2006, pp. 1-4


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Dissertations:

Arnošt, V.: Simulation of Spatial Sound Propagation, Brno, CZ, 2006, p. 94

Software:

Drahanský, M., Orság, F.: MagicGel, Brno, CZ, 2006

Janoušek, V., Kironský, E.: SmallDEVS-2006-07-18 (1st version with GUI), Bern, CH, SqF, 2006

Janoušek, V.: Czech Support for Squeak Smalltalk up to 3.7, Bern, CH, SqF, 2006

Janoušek, V.: SqOS 0.2, Brno, CZ, 2006

Abstracts:


Patents

**Method and mechanism for acquirement of biometrical features**, registration: 2005, approval: 2006, expiration: 2036

**Authors**: Drahanský Martin, Funk Wolfgang, Nötzel Ralf

**Owner**: Fraunhofer Gesellschaft zur Förderung der angewandten Forschung e.V.
### Seminars

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<td>Kamil Malinka</td>
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<td>Bohuslav Křena</td>
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<td>Rough Sets Utilization in Datamining</td>
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<td>30.3.</td>
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<td>Semantic Web from Multiagent Systems Perspective</td>
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<td>Adam Rogalewicz</td>
<td>Verification of Programs with Dynamic Data Structures Using ARTMC</td>
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<td>Aleš Smrčka</td>
<td>Analysis, Modelling and Formal Verification of Hardware</td>
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<td>Elod Kironský</td>
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<td>Petr Polášek</td>
<td>Metalanguages for DEVS. Transformation of Models for Various Simulation Environments</td>
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<td>Jiří Vintera</td>
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<td>Roman Skřivánek</td>
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<td>Lukáš Grulich</td>
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<td>Jonathan Billington (University of South Australia v Adelaide)</td>
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<td>Michal Kraus</td>
<td>Parallel Architectures Utilizing Numeric Integration</td>
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<td>Specialized Computer System Inputs and Outputs</td>
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<td>Milan Píndryč</td>
<td>Modern Methods for Electronic Circuits Modelling and Simulation</td>
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<td>Václav Šátek</td>
<td>Stiff Systems of Differential Equations</td>
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<td>Michal Cerhák</td>
<td>Modelling and Simulation Based Design of Adaptive and Evolving Systems</td>
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<td>Jakub Bednář</td>
<td>Optimization of Game State Space Generation</td>
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<td>Pavel Jurka: Datamining from XML Using Rough Sets</td>
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<td>Zdeněk Mazal: Development of Rational Agents using Petri Nets</td>
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<td>Előd Kironský: Interactive Tools for Model Based Design of Intelligent Systems</td>
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<td>Petr Polášek: Multiparadigm Modelling Integrated with Exploratory Programming</td>
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<td>- A New Approach to Simulation-Based Development</td>
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<td>Kamil Malinka: Security of Biometric Autentization in Information Systems</td>
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<td>Roman Skřivánek: Beta Language Extensions</td>
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<td>Jaroslav Rozman: Mobile Robot from FRVS project</td>
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<tr>
<td>7.12.</td>
<td>Pavel Erlebach: Pattern Based Verification Extended to Tree Structures</td>
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<td></td>
<td>Lukáš Grulich: Socio-Economic Systems Modelling</td>
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<tr>
<td>14.12.</td>
<td>Adam Rogalewicz: Verification of Programs with Dynamic Data Structures</td>
<td></td>
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<td></td>
<td>Aleš Smrčka: Formal Verification of Hardware Designs</td>
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</tr>
</tbody>
</table>
III.3. Department of Computer Graphics and Multimedia

The Department of Computer Graphics and Multimedia is responsible for teaching courses in Computer Graphics and Multimedia, a MSc study programme specialization, which covers computer graphics and multimedia, speech processing, human-machine interfaces, image and sound processing and compression, application interfaces for computer graphics and multimedia, and basics of applied computer graphics disciplines, such as computer-aided design, geographic information systems, etc. The Department of Computer Graphics and Multimedia is also responsible for teaching Signals and Systems, Computer Graphics Basics and Human-Machine Interface Design courses in Information Technology Bc study programme.

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

- Computer graphics algorithms accelerated using DSP and FPGA,
- perceptually-based robust feature extraction for speech and speaker recognition
- very low bit rate coding
- realistic rendering of complex scenes and volume rendering,
- automatic determination of speech units
- large scale speech database collection
- animation of articulated structures, kinematics and dynamics,
- medical data processing and visualization and human body modelling reconstruction from VH data sets,
- parallel rendering implementation of signal processing and graphics algorithms.

The majority of courses consists of lectures supplemented with projects and laboratory lessons. The knowledge that students gain during the lectures is further developed in the laboratory lessons through practical experience and then practised in the individually assigned projects and/or team projects. Most of the laboratory lesson assignments and projects are platform-independent. Tasks that require special equipment can be solved with the use of available Silicon Graphics stations, high-performance computer systems, and specialized periferies.

Staff

Head of Department
Zemčík Pavel, Doc. Dr. Ing.

Deputy Head of Department
Černocký Jan, Doc. Dr. Ing.

Secretary
Slámová Jana

Associate professor
Černocký Jan, Doc. Dr. Ing.
Smrž Pavel, Doc. RNDr., Ph.D.
Zemčík Pavel, Doc. Dr. Ing.
Research worker
Matějka Pavel, Ing.
Schwarz Petr, Ing.

Assistant professor
Burget Lukáš, Ing., Ph.D.
Herout Adam, Ing., Ph.D.
Kršek Přemysl, Ing., Ph.D.
Motlíček Petr, Ing., Ph.D.
Sumec Stanislav, Ing., Ph.D.

Assistant lecturer
Grézl František, Ing.
Chalupníček Kamil, Ing.
Karafiát Martin, Ing.

Assistant
Potůček Igor, Ing., Ph.D.

Technical staff
Otáhalová Sylva

Ph.D. student
Beran Vítězslav, Ing.
Glembek Ondřej, Ing.
Granát Jiří, Ing.
Chudý Robert, MgA.
Kadlec Jaroslav, Ing.
Pečiva Jan, Ing.
Přibyl Jaroslav, Ing.
Seeman Michal, Ing.
Svojanovský Petr, Ing.
Szöke Igor, Ing.
Šiler Ondřej, Ing.
Šilhavá Jana, Ing.
Španěl Michal, Ing.
Štanel Vit, Ing.
Švub Miroslav, Ing.
Venera Jiří, Ing.
Vyskočil Michal, Ing.

Equipment

- 3D Minolta VIVID 800 scanner for automatic scanning of objects up to the size of 1x1x1m with a computer-controlled revolving table for manipulation with the scanned objects. The scanner is connected to the Silicon Graphics Octane workstation.
- Software called SPEL - Speech Processing Electronic Library specialized IEEE software for speech signal processing.
- CAMEA DX6 with DSP TI C6711 and FPGA Virtex E-300 for acceleration of graphical computing.
- CAMEA UNI1-P-BUT with DSP TI C6416 and FPGA Virtex II-500 for acceleration of raster image processing.
- Equipment for meeting recording with a camcorder, hyperbolic mirror (for 360 angle), four microphones, and a notebook.
• Rapid prototyping equipment (3D printer) Z310 by Z-corporation for making 3D models of human tissues based on medical diagnostic image systems (CT/MR)
• Stereo data video projector and two large-scale LCDs for demonstrations.

Tuition

<table>
<thead>
<tr>
<th>Abbr.</th>
<th>Course</th>
<th>Sem</th>
<th>Cr. Hours</th>
<th>Lecturer</th>
</tr>
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<tr>
<td>MMD</td>
<td>Advanced Methods of 3D Scene Visualisation</td>
<td>W</td>
<td>0 39-0-0-0-0</td>
<td>Zemčík Pavel, Doc. Dr. Ing.</td>
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<td>VIN</td>
<td>Computer Art</td>
<td>S</td>
<td>5 26-0-0-0-26</td>
<td>Zemčík Pavel, Doc. Dr. Ing.</td>
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<tr>
<td>PGR</td>
<td>Computer Graphics</td>
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<td>PGD</td>
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<td>Zemčík Pavel, Doc. Dr. Ing.</td>
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<td>POV</td>
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<td>W</td>
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<tr>
<td>KRG</td>
<td>Creative Art</td>
<td>W</td>
<td>4 13-0-0-0-26</td>
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<tr>
<td>CZR</td>
<td>Digital Speech Processing</td>
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<td>Černocký Jan, Doc. Dr. Ing.</td>
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<td>GZN</td>
<td>Graphical and Sound Interfaces and Standards</td>
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<td>SCS</td>
<td>Human-Machine Interfaces</td>
<td>W</td>
<td>6 26-0-0-18-21</td>
<td>Zemčík Pavel, Doc. Dr. Ing.</td>
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<tr>
<td>IJE</td>
<td>Java Programming Language</td>
<td>W</td>
<td>5 26-0-0-12-14</td>
<td>Sumec Stanislav, Ing., Ph.D.</td>
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<td>MZD</td>
<td>Modern Methods of Speech Processing</td>
<td>W</td>
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<td>ZPD</td>
<td>Natural Language Processing</td>
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<td>Černocký Jan, Doc. Dr. Ing.</td>
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<tr>
<td>ZPJ</td>
<td>Natural Language Processing</td>
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<td>0 39-0-0-0-0</td>
<td>Smrž Pavel, Doc. RNDr., Ph.D.</td>
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<tr>
<td>ZPD</td>
<td>Natural Language Processing</td>
<td>W</td>
<td>5 26-0-0-0-26</td>
<td>Smrž Pavel, Doc. RNDr., Ph.D.</td>
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<td>ZAGP</td>
<td>Rudiments of Computer Graphics</td>
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<td>ZRE</td>
<td>Speech Signal Processing</td>
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</tr>
</tbody>
</table>

**Research Projects**

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

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

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

**Centre of Computer Graphics**, MSMT, CPG LC06008, 2006-2010, running  
*Research leader:* Zemčík Pavel

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

*Research leader:* Černocký Jan  
*Team leaders:* Kašpárek Tomáš, Matějka Pavel, Schwarz Petr

**Internationalisation – Preparatory Phase for the European Joint Degree**, RP MSMT, 2006, running  
*Research leader:* Honzík Jan M.  
*Team leader:* Zemčík Pavel
Virtual Medical-Technological Laboratory for 3D Human Tissues Modelling, CESNET, 161/2005, 2006, running  
**Research leader:** Kršek Přemysl  
**Team leaders:** Černochová Pavlína, Kašpárek Tomáš, Krupa Petr, Pečiva Jan, Stoklas Jiří, Španěl Michal

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

**Research leader:** Černocký Jan

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

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

Augmented Multi-party Interaction, EU-6FP-IST, 506811-AMI, 2004-2006, running  
**Research leader:** Heřmanský Hynek  
**Team leaders:** Burget Lukáš, Černocký Jan, Grézl František, Kadlec Jaroslav, Karafiát Martin, Karafiát Martin, Matějka Pavel, Motlíček Petr, Pečiva Jan, Potůček Igor, Schwarz Petr, Sumec Stanislav, Španěl Michal, Zemčík Pavel

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

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

**Research leader:** Zemčík Pavel
Recognition of Keywords and Actions in Audio Visual Data, CESNET, 119/2004, 2004-2006, running

**Research leader:** MotlÍchek Petr

**Team leaders:** Karafiát Martin, Kašpárek Tomáš, Sumec Stanislav

**Co-operation**

**Co-operation the Czech Republic**

- Faculty of Informatics MU Brno, Doc. Karel Pala, Dr. Ivan Kopeček, Doc. Jiří Sochor – co-operation in speech processing and computer graphics and natural language processing, [http://www.fi.muni.cz](http://www.fi.muni.cz)
- VŠB-TU, Ostrava, Faculty of Electronics and Informatics, Dr. Arnošt Šarman – annual series of lectures given by the staff and Ph.D. students of DCGM, VŠB-TU – focused on computer graphics, [http://www.vsb-tu.cz](http://www.vsb-tu.cz)
- Department of Computers FELK ČVUT Praha, the group of computer graphics, Prof. Jiří Žára - co-operation in basic research, MSMT Centre of Computer Graphics, [http://cs.felk.cvut.cz](http://cs.felk.cvut.cz)
- St. Anne Faculty Hospital, Brno, Clinic of Imaging Methods, Head of the Clinic Doc. Petr Krupa and Clinic of Stomatology, Clinic of Plastic and Aesthetical Surgery, and Clinic of Traumatology – co-operation in the field of computer models of tissues, [http://www.fnusa.cz](http://www.fnusa.cz)
- Clinic of Traumatology, Faculty Hospital Bohunice, Brno, Head: Doc. MUDr. Michal Mašek, CSc – co-operation in the field of computer models of tissues, [http://www.fibno.cz](http://www.fibno.cz)

**International Co-operation**

- University of Bristol, Bristol, UK, Department of Computer Science, Dr. Alan Chalmers – co-operation in the area of computer graphics, exchange of Ph.D. students, [http://www.cs.bristol.ac.uk](http://www.cs.bristol.ac.uk)
- University of Surrey, Guildford, UK, Centre for Vision, Speech, and Signal Processing, Prof. Josef Kittler, Dr. William Christmas – image processing, exchange of Ph.D. students, [www.ee.surrey.ac.uk/CVSSP/](http://www.ee.surrey.ac.uk/CVSSP/)
- University of Helsinki, Helsinki, Finsko, Laboratory of Computational Engineering, Prof. Mikko Sams, Dr. Michael Frydrych – co-operation in the area of man-machine communication, exchange of Ph.D. students, [http://www.lce.hut.fi](http://www.lce.hut.fi)
- Lappeenrantta University of Technology, Lappeenrantta, Finsko, 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), [http://www.lut.fi](http://www.lut.fi)
- University of Joensuu, Joensuu, Finsko, Department of Computer Science, Prof. Jussi Parkkinen, Dr. Markku Hauta-Kasari – multispectral colour image processing, exchange of students, [http://www.joensuu.fi/joyindex.html](http://www.joensuu.fi/joyindex.html)
- Technische Universität Wien, Institut für Komputergrafik, Thomas Theußl – Annual international students' seminar (Central European Seminar on Computer Graphics), [http://www.cg.tuwien.ac.at/](http://www.cg.tuwien.ac.at/)
• Technische Universität Graz, Institute for Computer Graphics and Vision, Markus Grabner – exchange of students and CESCOG (Central European Seminar on Computer Graphics) - an annual international students' seminar, http://www.icg.tu-graz.ac.at
• Department of Computer Graphics and Image Processing, Faculty of Mathematics, Physics and Informatics, Comenius University, Bratislava, Slovak Republic, Dr.Andrej Ferko – CESCOG (Central European Seminar on Computer Graphics) - an annual international students' seminar, http://www.fmph.uniba.sk/

Visitors to the Department

Dr. Michael Frydrych, Helsinki University of Technology, Finland, 2 days, January 2006

Visits of Staff Members to Foreign Institutions

• Beran Vítězslav, Ing., CLEAR Evaluation Campaign and Workshop, Southampton, GB, 4 days
• Beran Vítězslav, Ing., University of Surrey Guildford, USG, Guildford, Surrey, GU2 7XH, Guildford, GB, 10 days
• Beran Vítězslav, Ing., Spring Conference on Computer Graphics, Častá- Papiernička, Slovakia, SK, 4 days
• Beran Vítězslav, Ing., Eurographics 2006, Vidéň, AT, 1 day
• Beran Vítězslav, Ing., Europe's Information Society, Helsinki, FI, 4 days
• Burget Lukáš, Ing., Ph.D., International Conference on Acoustics, Speech, and Signal Processing, Toulouse, France, FR, 14 days
• Burget Lukáš, Ing., Ph.D., NIST Workshop and The Speaker and Language Recognition Workshop, Puerto Rico, San Juan, US, 12 days
• Burget Lukáš, Ing., Ph.D., University of Edinburgh, UEDIN, Old College, South Bridge, EH8 9YL Edinburgh, GB, 5 days
• Černocký Jan, Doc. Dr. Ing., Ecole Superieure d'Engenieurs en Electrotechnique et Electronique, Cité Descartes BP 99, 93162 Nois-le-Grand, FR, 3 days
• Černocký Jan, Doc. Dr. Ing., European Commission EU, Paris, France, FR, 3 days
• Černocký Jan, Doc. Dr. Ing., International Conference on Acoustics, Speech, and Signal Processing, Toulouse, France, FR, 8 days
• Černocký Jan, Doc. Dr. Ing., CeBit 2006, Hannover, Germany, DE, 3 days
• Černocký Jan, Doc. Dr. Ing., Institut Dalle Molle d'Intelligence Artificielle Perceptive, IDIAP, Rue du Simplon 4, CH-1920 Martigny, CH, 3 days
• Černocký Jan, Doc. Dr. Ing., Ecole Superieure d'Engenieurs en Electrotechnique et Electronique, ESIEE, Noisy-le-Grand, FR, 6 days
• Černocký Jan, Doc. Dr. Ing., ATAC, ATAC, IT, 3 days
• Černocký Jan, Doc. Dr. Ing., Utrecht EMasters Summer School in Language and Speech 2006, Trans 10, 3512 JK Utrecht, The Netherlands, NL, 3 days
• Černocký Jan, Doc. Dr. Ing., Institut Dalle Molle d'Intelligence Artificielle Perceptive, IDIAP, Rue du Simplon 4, CH-1920 Martigny, CH, 2 days
• Černocký Jan, Doc. Dr. Ing., European Union, Amsterdam, The Netherlands, NL, 3 days
• Černocký Jan, Doc. Dr. Ing., INSTITUT NATIONAL DE RECHERCHE EN INFORMATIQUE ET EN, INRIA, Sophia Antipolis, FR, 3 days
• Černocký Jan, Doc. Dr. Ing., Europe's Information Society, Helsinki, FI, 4 days
• Glembek Ondřej, Ing., University of Joensuu, UJ, 80101 Joensuu, FI, +358 (13) 251 111, 4 days
• Grézl František, Ing., ATAC, IT, 4 days
• Herout Adam, Ing., Ph.D., 3rd Joint Workshop on Multimodal Interaction and Related Machine Learning Algorithms, Washington, US, 8 days
• Herout Adam, Ing., Ph.D., International Workshop on Embedded Systems, Crete, GR, 4 days
• Herout Adam, Ing., Ph.D., Digital Technologies 2006, Žilina, Slovakia, SK, 2 days
• Chudý Peter, Ing., Ph.D., University of Bristol, UBRIS, Woodland Road, BS8 1UB Bristol, GB, 5 days
• Kadlec Jaroslav, Ing., Spring Conference on Computer Graphics, Častá- Papiernička, Slovakia, SK, 4 days
• Karafiát Martin, Ing., 3rd Joint Workshop on Multimodal Interaction and Related Machine Learning Algorithms, Washington, US, 8 days
• Karafiát Martin, Ing., INFORMATION SOCIETY 2006, Ljubljana, SI, 7 days
• Kršek Přemysl, Ing., Ph.D., University of Surrey Guildford, USG, Guildford, Surrey, GU2 7XH, Guildford, GB, 5 days
• Kršek Přemysl, Ing., Ph.D., 3rd International Conference, BioMedical Visualization, London, England, GB, 4 days
• Matějka Pavel, Ing., International Conference on Acoustics, Speech, and Signal Processing, Toulouse, France, FR, 14 days
• Matějka Pavel, Ing., NIST Workshop and The Speaker and Language Recognition Workshop, Puerto Rico, San Juan, US, 12 days
• Matějka Pavel, Ing., Instituit Dalle Molle d'Intelligence Artificielle Perceptive, IDIAP, Rue du Simplon 4, CH-1920 Martigny, CH, 3 days
• Matějka Pavel, Ing., NIST Spoken Term Detection Evaluation Workshop, Gaithersburg, MD, US, 7 days
• Pečiva Jan, Ing., ACM International Conference on Virtual Reality Continuum and Its Applications, Hong Kong, CN, HK, 9 days
• Potúček Igor, Ing., Ph.D., Wainhouse Research European Forum, Berlin, Germany, DE, 3 days
• Potúček Igor, Ing., Ph.D., 3rd Joint Workshop on Multimodal Interaction and Related Machine Learning Algorithms, Washington, US, 8 days
• Potúček Igor, Ing., Ph.D., University of Edinburgh, UEDIN, Old College, South Bridge, EH8 9YL Edinburgh, GB, 5 days
• Seeman Michal, Ing., University of Joensuu, UJ, 80101 Joensuu, FI, +358 (13) 251 111, FI, 2 months
• Schwarz Petr, Ing., International Conference on Acoustics, Speech, and Signal Processing, Toulouse, France, FR, 8 days
• Schwarz Petr, Ing., Ecole Superieure d'Engenieurs en Electrotechnique et Electronique, ESIEE, Noisy-le-Grand, FR, FR, 6 days
• Schwarz Petr, Ing., NIST Workshop and The Speaker and Language Recognition Workshop, Puerto Rico, San Juan, US, 12 days
• Sinopalniková Anna, Mgr., 3rd International Global WordNet Conference, South Corea, Jeju, KR, 8 days
• Smrž Pavel, Doc. RNDr., Ph.D., Conference on Intelligent Text Processing and Computational Linguistics, Mexico City, Mexico, MX, 9 days
• Smrž Pavel, Doc. RNDr., Ph.D., European Comission EU, Paris, France, FR, 3 days
• Smrž Pavel, Doc. RNDr., Ph.D., 15th International Conference on Knowledge Engineering and Knowledge Management, Podebrady, CZ, 3 days
• Smrž Pavel, Doc. RNDr., Ph.D., International Conference on Semantics and Digital Media Technology, Athens, GR, 5 days
• Smrž Pavel, Doc. RNDr., Ph.D., Europe's Information Society, Helsinki, FI, 2 days
• Szöke Igor, Ing., Instititut Dalle Molle d'Intelligence Artificielle Perceptive, Paris, FR, 6 days
• Szöke Igor, Ing., Utrecht EMasters Summer School in Language and Speech 2006, Trans 10, 3512 JK Utrecht, The Netherlands, NL, 4 days
• Szöke Igor, Ing., NIST Spoken Term Detection Evaluation Workshop, Gaithersburg, MD, US, 7 days
• Šilhavá Jana, Ing., 14th Summer school on Image Processing, Szeged, Hungary, HU, 10 days
• Španěl Michal, Ing., University of Joensuu, UJ, 80101 Joensuu, FI, +358 (13) 251 111, FI, 4 days
• Španěl Michal, Ing., The Sixth IASTED International Conference on Visualization, Imaging, and Image Processing, Palma de Mallorca, ES, 7 days
• Zemčík Pavel, Doc. Dr. Ing., European Comission EU, Paris, France, FR, 3 days
• Zemčík Pavel, Doc. Dr. Ing., CeBit 2006, Hannover, Germany, DE, 3 days
• Zemčík Pavel, Doc. Dr. Ing., 3rd Joint Workshop on Multimodal Interaction and Related Machine Learning Algorithms, Washington, US, 8 days
• Zemčík Pavel, Doc. Dr. Ing., Spring Conference on Computer Graphics, Častápapiernička, Slovakia, SK, 2 days
• Zemčík Pavel, Doc. Dr. Ing., University of Joensuu, UJ, 80101 Joensuu, FI, +358 (13) 251 111, FI, 4 dny
• Zemčík Pavel, Doc. Dr. Ing., Technological Educational Institute of Crete, Heracleion, Greece, TEI of Crete, POB 1939, IRAKlio, Crete, Greece, Heracleion, GR, 4 days
• Zemčík Pavel, Doc. Dr. Ing., Instititut Dalle Molle d'Intelligence Artificielle Perceptive, IDIAP, Rue du Simplon 4, CH-1920 Martigny, CH, 2 days
• Zemčík Pavel, Doc. Dr. Ing., European Union, Amsterdam, The Netherlands, NL, 3 days
• Zemčík Pavel, Doc. Dr. Ing., Europe's Information Society, Helsinki, FI, 4 days
• Zemčík Pavel, Doc. Dr. Ing., University of Bristol, UBRIS, Woodland Road, BS8 1UB Bristol, GB, 5 days

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

Membership in International Organizations and Societies

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

Multimedia:


Abstracts:


Conference Papers:


Journal Articles:


Vyskočil, M.: Novinky v Python 2.5 - 2 (korutiny, konstrukce with), In: ABC Linuxu, Vol. 2006, No. 12, Praha, CZ, p. 3, ISSN 1214-1267


**Seminars**

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<td>13. 1. 2006</td>
<td>Multi-object tracking evaluation for AMI video data</td>
<td>V. Beran</td>
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<td>13. 1. 2006</td>
<td>Overview of 1D and 2D linear filtering using fast convolution</td>
<td>Joao Tavares Silva</td>
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<td>27. 1. 2006</td>
<td>Tracking of participants in meeting videos</td>
<td>Michal Hradiš</td>
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<td>27. 1. 2006</td>
<td>Automatic grapheme to phoneme conversion</td>
<td>Stanislav Kontár</td>
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<td>17. 2. 2006</td>
<td>Evaluation of tracking methods</td>
<td>Igor Potůček</td>
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<td>17. 2. 2006</td>
<td>Initial work on multi-modal browser</td>
<td>Petr Schwarz</td>
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<td>3. 3. 2006</td>
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<td>14. 4. 2006</td>
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<td>12. 5. 2006</td>
<td>Recognition of handwriting for mobile phones</td>
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<td>Neural networks based image segmentation</td>
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<td>Detection of fundamental frequency in time domain</td>
<td>Dalibor Pernica</td>
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<td>Gender and age estimation from speech</td>
<td>Valiantsina Hubeika</td>
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<td>PRAY software for ray-tracing</td>
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<td>2. 6. 2006</td>
<td>Experiments in Czech language modelling</td>
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<td>NIST speaker verification and evaluation system</td>
<td>Pavel Matějka, Lukáš Burget, Petr Schwarz, Ondřej Glembek, Martin Karafiát a František Grézl</td>
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<td>23. 6. 2006</td>
<td>Framework for AdaBoost experiments</td>
<td>Michal Hradiš</td>
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<td>Hardware implementation of AdaBoost classifier</td>
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<td>Yannick Schwarz, Maxime Baracco</td>
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<td>14. 9. 2006</td>
<td>Group presentation, POS tagging transcriptions, phonetic landmarks in sérech recognition</td>
<td>Stephane Huet, Guillaume Gravier</td>
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<td>6. 10. 2006</td>
<td>DigILib and ImageStruct</td>
<td>Adam Herout</td>
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<td>13. 10. 2006</td>
<td>Affine invariant region detectors based on corners</td>
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<td>13. 10. 2006</td>
<td>Omni-directional image processing for human detection and tracking</td>
<td>Igor Potůček</td>
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<td>13. 10. 2006</td>
<td>BUT system for NIST spoken term detection evaluations 2006, Igor Szöke, Michal Fapšo</td>
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<td>10. 11. 2006</td>
<td>Interactive, auditive information system for the mobility of blind people in public transports, Olivier Venard</td>
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<td>08. 12. 2006</td>
<td>Language modelling in Czech, Ilya Oparin</td>
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</table>
III.4. Department of Computer Systems

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

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

- Application-specific architectures: high-performance embedded systems, multiprocessor systems on a chip (MPSoC) 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,
- diagnostics, testability, and safety.

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

Staff

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

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

Professor
Dvořák Václav, Prof. Ing., DrSc.

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

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

Laboratory of network architectures and applications

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

Laboratory of Embedded Systems

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

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

20 benches equipped with development kits with HC08 microcontroller, FPGA, basic peripheries and interfaces for HW applications with Metrowerks CodeWarrior and Xilinx ISE Webpack - modern programmable support. Each bench contains an EZ Digital OS 5020 oscilloscope that enables two-channel waveform display in the frequency range up to 20 MHz.

1 bench with COMBO6 PCI card (Xilinx FPGA Virtex II Pro) for evolutionary circuit design.
Laboratory of DSP Systems
1 bench for developing DSP applications with DSP56000 processors, Motorola.

8 benches equipped with DSK6414 kits, Texas Instruments, for work with high-performance VLIW DSP processors TMS320C6414.

Computer Peripheral Laboratory
A 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.

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

An output peripheral graphical devices bench – an ink printer HP DesignJet 488CA with HPGL and PCL graphic languages, Roland x/y plotter with HPGL language.

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

A digital interface bench - cards for PC / devices with RS-232, RS-485, RS-422, GPIB.

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

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

Tuition

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### Research Projects

**Evolutionary Algorithms Applied to Dynamic Problems**, FRVŠ MSMT, FR0136/2006/G1, 2006, running

**Research leader:** Kobliha Miloš  
**Team leader:** Schwarz Josef


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

EDA Evolutionary Design of Group Communication Schedules, FRVŠ MSMT, FR2983/2006/G1, 2006, running
Research leader: Jaroš Jiří
Team leader: Dvořák Václav

Test Scheduling for Embedded Systems under Power Constraints, FRVŠ MSMT, FR3383/2006/G1, 2006, running
Research leader: Škarvada Jaroslav
Team leader: Kotásek Zdeněk

Biology-inspired Hardware Teaching Support, FRVŠ MSMT, FR825/2006/G1, 2006, completed
Research leader: Bídlo Michal
Team leader: Sekanina Lukáš

Testing of Embedded Systems, FRVŠ MSMT, FR3198/2006/G1, 2006, running
Research leader: Kubek Ján
Team leader: Kotásek Zdeněk

Research leader: Švéda Miroslav
Team leader: Ryšavý Ondřej

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

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

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

Optimization Processes in Diagnostics of Digital Systems, GAČR, GP102/05/P193, 2005-2007, running
Research leader: Strnadel Josef
IST Requalification of Disabled Persons CZ/04/B/F/NT-168025, CEVAPO BUT, 2004-2007, running  
**Research leader:** Holec Petr  
**Team leader:** Drábek Vladimír

**Research leader:** Kotásek Zdeněk  
**Team leaders:** Drábek Vladimír, Růžička Richard, Sekanina Lukáš, Strnadl Josef

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

**Research leader:** Zemčík Pavel

**Co-operation the Czech Republic**

- Beta Control, s.r.o., Brno, J. Gutman – co-operation in the field of embedded systems, [http://www.betacontrol.cz/](http://www.betacontrol.cz/)
- Camea, s.r.o., Brno, Ing. P. Valetna – co-operation in the field of design, development and implementation of electronic systems, [http://www.camea.cz/](http://www.camea.cz/)
- Institute of Informatics and Automation, AV ČR, Dr. Ing. J. Schier – co-operation in the field of design of electronic systems, [http://www.utia.cas.cz/](http://www.utia.cas.cz/)
• Faculty of Mechatronics, Liberec University of Technology, Doc. Ing. Zdeněk Pliva, CSc. – co-operation, IST-2000-30193 REASON project (completed in spring 2006), http://www.fm.vslib.cz/


• Faculty of Informatics Masaryk University in Brno, Ing. Matej Lexa PhD. – co-operation in the field of accelerated algorithm analysis in biological sequences, http://www.fi.muni.cz


International Co-operation

• Institute of Informatics, Slovak Academy of Sciences, SR, Doc. RNDr. Elena Gramatová, CSc. – co-organization of seminars for doctoral students PAD, http://www.ui.sav.sk/

• Technical University in Tallin, Estonia, Prof. Raimund Ubar – co-operation, IST-2000-30193 REASON project (completed in spring 2006), http://www.tlu.ee/

• Norwegian University of Science and Technology, Trondheim, P. Haddow – co-operation in the field of evolvable hardware, http://www.idi.ntnu.no/~pauline/

• Pennsylvanian State University, The Behrend College, Erie, USA, Dr. R. Ford – co-operation in the field of computing platform design, http://www.pserie.psu.edu/

• Univerzita v Aveiru, Portugal, Prof. Antonio Ferrari – co-operation in the field of embedded systems, http://www.ua.pt/deti/

• Univesity of Wyoming, USA, Dr. J. Cupal – co-operation in the field of electronic system design, http://www.uwyo.edu/

• Dept. of Statistics, Operational Research and Computing, La Laguna University, Tenerife, Spain, Prof. Casiano Rodriguez Leon – co-operation in the field of parallel computing, http://nereida.deioc.ull.es/

• NASA Jet Propulsion Laboratory, Pasadena, USA, A. Stoica – co-operation in the field of evolutionary circuit design, http://www.jpl.nasa.gov/

• University of York, J. Miller – co-operation in the field of evolutionary design http://www.york.ac.uk/

• Frauenhofer-Institute IIS/EAS, Dresden, Prof. Dr. Bernd Straube, Německo, preparation of the bilateral project “Reconfiguration and Self Repair for SoCs in Nanoelectronic Technologies“, http://www.eas.iis.fraunhofer.de/

• Brandenburg University of Technology at Cottbus, Germany, Prof. Dr.-Ing. Heinrich Theodor Vierhaus, preparation of the bilateral project “Reconfiguration and Self Repair for SoCs in Nanoelectronic Technologies“, http://www.informatik.tu-cottbus.de

Visitors to the Department

• Dr. Julian Miller, University of York, a lecture on Evolution in materio: On the evolution of computation in materials

• Ing. Jiří Kubalík, Ph.D., FEL ČVUT, Praha a lecture on robust evolutionary algorithms
Visits of Staff Members to Foreign Institutions

- Bidlo Michal, Ing., Pedagogický software 2006, České Budějovice, CZ, 3 days
- Bidlo Michal, Ing., Parallel Problem Solving From Nature, Reykjavik, IS, 9 days
- Bidlo Michal, Ing., Computer Architecture & Diagnostics, 2006, Hotel Podjavorník, Papradno, Považská Bystrica, SK, 3 days
- Bidlo Michal, Ing., Third International Conference on Computational Intelligence, Barcelona, ES, 6 days
- Bidlo Michal, Ing., 2nd Doctoral Workshop on Mathematical and Engineering Methods in Computer Science - MEMICS'06, Mikulov, CZ, 4 days
- Bidlo Michal, Ing., Norwegian University of Science and Technology, Geelmuydens gate 1, Trondheim, NO, 10 days
- Drábek Vladimír, Doc. Ing., CSc., Computer Architecture & Diagnostics, 2006, Hotel Podjavorník, Papradno, Považská Bystrica, SK, 3 days
- Drábek Vladimír, Doc. Ing., CSc., Computer Science Education Workshop, Gabčíkovo, Slovensko, SK, 2 days
- Dvořák Václav, Prof. Ing., DrSc., 5th International Conference on Networking ICN 2006, IARIA, Indian Hotel, Morné, Mauritius, MU, 10 days
- Eysselt Miloš, Ing., CSc., Computer Science Education Workshop, Gabčíkovo, Slovensko, SK, 2 days
- Gajda Zbyšek, Ing., IEEE Design and Diagnostics of Electronic Circuits and Systems Workshop, Masarykova kolej, Thákurova 1, Praha 6 - Dejvice, CZ, 3 days
- Gajda Zbyšek, Ing., 1st NASA/ESA Conference on Adaptive Hardware and Systems, Bahcesehir University, Istanbul, TR, 6 days
- Gajda Zbyšek, Ing., Computer Architecture & Diagnostics, 2006, Hotel Podjavorník, Papradno, Považská Bystrica, SK, 3 days
- Herrman Tomáš, Ing., Computer Architecture & Diagnostics, 2006, Hotel Podjavorník, Papradno, Považská Bystrica, SK, 3 days
- Herrman Tomáš, Ing., 7TH International Scientific Conference Electronic Computers and Informatics 2006, Herľany, SK, 3 days
- Jaroš Jiří, Ing., IEEE Design and Diagnostics of Electronic Circuits and Systems Workshop, Masarykova kolej, Thákurova 1, Praha 6 - Dejvice, CZ, 2 days
- Jaroš Jiří, Ing., 5-th International Symposium on Parallel Computing in Electrical Engineering, Białystok, PL, 5 days
- Jaroš Jiří, Ing., Computer Architecture & Diagnostics, 2006, Hotel Podjavorník, Papradno, Považská Bystrica, SK, 3 days
- Jaroš Jiří, Ing., 2nd Doctoral Workshop on Mathematical and Engineering Methods in Computer Science - MEMICS'06, Mikulov, CZ, 3 days
- Jaroš Jiří, Ing., Université de Lausanne, UNIL, Batiment Unicentre, CH-1015 Lausanne, CH, +41 21 692 20 11, CH, 7 days
- Kobliha Miloš, Ing., 3rd European Workshop on Evolutionary Algorithms in Stochastic and Dynamic Environments, Europa Congress Center, Hárshegyi str. 5-7, 1021 Budapest, HU, 4 days
- Kobliha Miloš, Ing., Computer Architecture & Diagnostics 2006, Hotel Podjavorník, Papradno, Považská Bystrica, SK, 3 days
- Kořenek Jan, Ing., IEEE Design and Diagnostics of Electronic Circuits and Systems Workshop, Masarykova kolej, Thákurova 1, Praha 6 - Dejvice, CZ, 4 days
- Kořenek Jan, Ing., Faculty of Information Technology BUT v Brně, Hotel Skalský Dvůr, Lýsek 52, 593 01, CZ, 2 days
• Kotásek Zdeněk, Doc. Ing., CSc., IEEE Design and Diagnostics of Electronic Circuits and Systems Workshop, Praha, CZ, 4 days
• Kotásek Zdeněk, Doc. Ing., CSc., 9th EUROMICRO Conference on Digital System Design, Hotel Croatia, Cavtat, HR, 5 days
• Kotásek Zdeněk, Doc. Ing., CSc., Computer Architecture & Diagnostics 2006, Hotel Podjavorník, Papradno, Považská Bystrica, SK, 3 days
• Kotásek Zdeněk, Doc. Ing., CSc., 2nd Doctoral Workshop on Mathematical and Engineering Methods in Computer Science - MEMICS'06, Mikulov, CZ, CZ, 4 days
• Kubek Ján, Ing., Computer Architecture & Diagnostics 2006, Hotel Podjavorník, Papradno, Považská Bystrica, SK, 3 days
• Kubek Ján, Ing., 7TH International Scientific Conference Electronic Computers and Informatics 2006, Herľany, SK, 4 days
• Kubek Ján, Ing., Bio-Inspired models of NEtwork, Information and Computing Systems, Cavalese, IT, 5 days
• Martinek Tomáš, Ing., IEEE Design and Diagnostics of Electronic Circuits and Systems Workshop, Masarykova kolej, Thákurova 1, Praha 6 - Dejvice, CZ, 4 days
• Ohlídal Miloš, Ing., 3rd European Workshop on Evolutionary Computation in Communication, Networks and Connected Systems, Europa Congress Center, Hárshegyi str. 5-7, 1021 Budapest, HU, 4 days
• Ohlídal Miloš, Ing., IEEE Design and Diagnostics of Electronic Circuits and Systems Workshop, Masarykova kolej, Thákurova 1, Praha 6 - Dejvice, CZ, 3 days
• Ohlídal Miloš, Ing., 5th International Symposium on Parallel Computing in Electrical Engineering, Bialystok, PL, 5 days
• Ohlídal Miloš, Ing., Computer Architecture & Diagnostics 2006, Hotel Podjavorník, Papradno, Považská Bystrica, SK, 3 days
• Pečenka Tomáš, Ing., IEEE Design and Diagnostics of Electronic Circuits and Systems Workshop, Masarykova kolej, Thákurova 1, Praha 6 - Dejvice, CZ, 4 dny
• Pečenka Tomáš, Ing., 9th EUROMICRO Conference on Digital System Design, Hotel Croatia, Cavtat, HR, 5 days
• Pečenka Tomáš, Ing., Computer Architecture & Diagnostics 2006, Hotel Podjavorník, Papradno, Považská Bystrica, SK, 3 days
• Pečenka Tomáš, Ing., 2nd Doctoral Workshop on Mathematical and Engineering Methods in Computer Science - MEMICS'06, Mikulov, CZ, 3 days
• Růžička Richard, Ing., Ph.D., Mikulov, CZ, 1 day
• Růžička Richard, Ing., Ph.D., 7TH International Scientific Conference Electronic Computers and Informatics 2006, Herľany, SK, 4 days
• Růžička Richard, Ing., Ph.D., The IASTED International Conference on Computational Intelligence, San Francisco, US, 9 days
• Sekanina Lukáš, Doc. Ing., Ph.D., 3rd European Workshop on Evolutionary Computation in Hardware Optimisation, Europa Congress Center, Hárshegyi str. 5-7, 1021 Budapest, HU, 4 days
• Sekanina Lukáš, Doc. Ing., Ph.D., ACM Computing Frontiers 2006 - Special Session on Dependability Issues in Emerging Technologies, HOTEL CONTINENTAL TERME, Via M. Mazzallela, 74, 80077 Ischia (Neapol), IT, 5 days
• Sekanina Lukáš, Doc. Ing., Ph.D., IEEE Design and Diagnostics of Electronic Circuits and Systems Workshop, Masarykova kolej, Thákurova 1, Praha 6 - Dejvice, CZ, 3 days
• Sekanina Lukáš, Doc. Ing., Ph.D., IEEE Congress on Evolutionary Computation, Sheraton Vancouver Wall Centre Hotel, 1088 Burrard Street, Vancouver, CA, 8 days
• Sekanina Lukáš, Doc. Ing., Ph.D., 1st NASA/ESA Conference on Adaptive Hardware and Systems, Bahcesehir University, Istanbul, TR, 6 days
• Sekanina Lukáš, Doc. Ing., Ph.D., Parallel Problem Solving From Nature, Reykjavik, IS, IS, 8 days
• Sekanina Lukáš, Doc. Ing., Ph.D., Computer Architecture & Diagnostics 2006, Hotel Podjavorník, Papradno, Považská Bystrica, SK, 3 days
• Sekanina Lukáš, Doc. Ing., Ph.D., 2nd Doctoral Workshop on Mathematical and Engineering Methods in Computer Science - MEMICS'06, Mikulov, CZ, 4 days
• Schwarz Josef, Doc. Ing., CSc., 3rd European Workshop on Evolutionary Algorithms in Stochastic and Dynamic Environments, Europa Congress Center, Hárshegyi str. 5-7, 1021 Budapest, HU, 4 days
• Schwarz Josef, Doc. Ing., CSc., IEEE Design and Diagnostics of Electronic Circuits and Systems Workshop, Praha, CZ, 3 days
• Schwarz Josef, Doc. Ing., CSc., 12th International Mendel Conference on Soft Computing, FME, BUT BRNO, CZ, 3 days
• Stareček Lukáš, Ing., IEEE Design and Diagnostics of Electronic Circuits and Systems Workshop, Masarykova kolej, Thákurova 1, Praha 6 - Dejvice, CZ, 3 days
• Stareček Lukáš, Ing., Computer Architecture & Diagnostics 2006, Hotel Podjavorník, Papradno, Považská Bystrica, SK, 3 days
• Straka Martin, Ing., Proceedings of the Computer and Architecture & Diagnostics, 2006, Hotel Podjavorník, Papradno, Považská Bystrica, SK, 3 days
• Straka Martin, Ing., 2nd Doctoral Workshop on Mathematical and Engineering Methods in Computer Science - MEMICS'06, Mikulov, CZ, 3 days
• Strnadel Josef, Ing., Ph.D., 13th Annual IEEE International Conference and Workshop on the Engineering of Computer Based Systems (ECBS), University of Potsdam, Potsdam, Germany, DE, 5 days
• Strnadel Josef, Ing., Ph.D., 7TH International Scientific Conference Electronic Computers and Informatics 2006, Herľany, SK, 4 days
• Šimek Václav, Ing., Proceedings of the Computer and Architecture & Diagnostics, 2006, Hotel Podjavorník, Papradno, Považská Bystrica, SK, 3 days
• Škarvada Jaroslav, Ing., IEEE Design and Diagnostics of Electronic Circuits and Systems Workshop, Masarykova kolej, Thákurova 1, Praha 6 - Dejvice, CZ, 3 days
• Škarvada Jaroslav, Ing., 1st International Workshop on Formal Models (WFM'06), Přerov, CZ, 2 days
• Škarvada Jaroslav, Ing., Pedagogický software 2006, České Budějovice, CZ, 3 dny
• Škarvada Jaroslav, Ing., Computer Architecture & Diagnostics, 2006, Hotel Podjavorník, Papradno, Považská Bystrica, SK, 3 days
• Škarvada Jaroslav, Ing., 2nd Doctoral Workshop on Mathematical and Engineering Methods in Computer Science - MEMICS'06, Mikulov, CZ, 3 days
• Vašíček Zdeněk, Ing., Computer Architecture & Diagnostics, 2006, Hotel Podjavorník, Papradno, Považská Bystrica, SK, 3 days

Membership in International Organizations and Societies
• Drábek Vladimír, Doc. Ing., CSc.,
  o Czech and Slovak Simulation Society
- Dvořák Václav, Prof. Ing., DrSc.,
  - IEEE - Computer Society, 1991 -
  - JUCS editorial board, Journal of Universal Computer Science, 1994 -
  - JEE editorial board, Journal of Electrical Engineering (Bratislava, Slovakia), 1996 -
- Eysselt Miloš, Ing., CSc.,
  - IGIP
- Fučík Otto, Dr. Ing.,
- Kotásek Zdeněk, Doc. Ing., CSc.,
  - IEEE Computer Society, 2003 –
- Růžička Richard, Ing., Ph.D.,
- Sekanina Lukáš, Doc. Ing., Ph.D.,
  - IEEE Computer Society, 2004 –
- Schwarz Josef, Doc. Ing., CSc.,
  - Evonet
  - Czech and Slovak Simulation Society
  - IEEE – Computational Intelligence Society, 2004 -
- Strnadel Josef, Ing., Ph.D.,
  - Czech and Slovak Simulation Society (CSSS), 2000 –
  - IEEE Computer Society, 2004 –

Publications

Journal Articles


Conference Papers:


Habilitation:

Sekanina, L.: Evolutionary Approach to the Implementation Problem, Brno, CZ, FIT BUT, 2006, p. 127

Manuals:

Eysselt, M.: A Study Programme at the Faculty of Information Technology, IT - Information Technology: A New Follow-Up Master Study Programme, in 2006/2007, MJ servis s.r.o., Brno, CZ, FIT BUT, 2006, p. 64


Eysselt, M.: Study Programmes at the Faculty of Information Technology: IT - Information Technology, A Survey, MJ servis s.r.o., Brno, CZ, FIT BUT, 2006, p. 20

Chapters in Books:


Seminars

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<th>Date</th>
<th>Topic</th>
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<td>6.1.2006</td>
<td>Evolutionary design of digital circuits by means of cellular automata and York in words and pictures, Michal Bidlo</td>
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<td>20.1.2006</td>
<td>Modelling of polymorphic gates, Lukáš Stareček. FITKit Presentation, Otto Fučík</td>
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<td>27.1.2006</td>
<td>FSM-based IP Core Analysis, Ján Kubek. Testability Analysis Based on Formal Model, Tomáš Herrman</td>
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<td>3.2.2006</td>
<td>Test Scheduling for SOC under Power Constraints, Jaroslav Škarvada</td>
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<td>3.3.2006</td>
<td>Evolutionary Design of Polymorphic Digital Circuits, Zbyšek Gajda</td>
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<td>10.3.2006</td>
<td>Evolutionary digital circuit design: Current limits, Lukáš Sekanina</td>
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<td>17.3.2006</td>
<td>Scheduling of group communications in crossbar networks with SF and WH switching, Miloš Ohlídal and Jiří Jaroš</td>
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<td>31.3.2006</td>
<td>FITTest_BENCH06, Tomáš Pečenka</td>
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<td>17.5.2006</td>
<td>Novel and efficient evaluation of sequence and structure similarity in bioinformatics using programmable hardware, Tomáš Martinek. Fast regular expression matching using FPGA, Jan Kořenek. Tools and methods for automatic benchmark circuit generation, Tomáš Pečenka</td>
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<td>30.5.2006</td>
<td>Test Scheduling Optimization for Digital Systems, Jaroslav Škarvada. Test Application Methods Based on Testable Blocks, Tomáš Herrman. Large Digital Circuits test Methodology, Ján Kubek. Bayesian optimization algorithms for dynamic problems, Miloš Kobliha</td>
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<td>6.10.2006</td>
<td>Compression algorithms for reconfigurable platforms, Václav Šimek. Design methodology for highly reliable FPGA-based systems, Martin Straka</td>
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<td>13.10.2006</td>
<td>The Usage of Evolution in the Construction of Predictors, Karel Slaný. Hardware implementation of evolvable systems and evolutionary filter design, Zdeněk Vašíček</td>
</tr>
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<td>3.11.2006</td>
<td>PhD study in words and pictures: How it works at foreign conferences, Michal Bidlo, Jiří Jaroš, Miloš Ohlídal, Václav Šimek</td>
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<td>10.11.2006</td>
<td>Robust Evolutionary Algorithms, Jiří Kubalík, FEL ČVUT, Praha.</td>
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<td>24.11.2006</td>
<td>Development of digital systems testing, Zdeněk Kotásek</td>
</tr>
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<td>1.12.2006</td>
<td>Probabilistic models – modelling of non-stationary functions and dynamic systems, Miloš Kobliha</td>
</tr>
<tr>
<td>15.12.2006</td>
<td>Power Consumption and Testable Blocks, Jaroslav Škarvada and Tomáš Herrman</td>
</tr>
</tbody>
</table>

**Other activities**

- Sekanina, Lukáš:
  Member of the editorial board of International Journal of Innovative Computing and Applications (Inderscience Publishers)
  Member of programme committee in:
NASA/ESA Conference on Adaptive Hardware and Systems - AHS 2006 (Istanbul)
Complexity through Development and Self-Organizing Representations - GECCO Workshop CODESOAR 2006 (Seattle, USA)
ACM International Conference on Computing Frontiers - Special session on Dependability Issues in Emerging Technologies 2006 (Ischia, Italy)
European Modelling and Simulation Conference 2006 (Toulouse, France)
IEEE Congress on Evolutionary Computation 2006 (Vancouver, CA)
European Conference on Genetic Programming 2006 (Budapest, Hungary)
European Workshop on Hardware Optimisation EvoHOT 2006 (Budapest, Hungary)
IEEE Design and Diagnostics of Electronic Circuits and Systems Workshop DDECS 2006 (Praha)
ECSIS Symposium on Intelligent Systems for Defense and Security ISDS (Iasi, 2006)
A programme of the Czech TV on artificial intelligence and psyche of machines. Good Morning with Czech Television Ostrava (24.11.2006).
Evolvable Computational Machines, a tutorial, Parallel Problem Solving from Nature, an international conference, and Evolvable hardware in the view of theoretical computer science, a tutorial, 1st International NASA/ESA Conference on Adaptive Hardware and Systems

- Kotásek Zdeněk:
  Deputy chairman of the programme committee of IEEE Design and Diagnostics of Electronic Circuits and Systems Workshop DDECS 2006
  Member of the programme committee of the MEMICS 2006 seminar, Mikulov
  Chairman of the organizing committee of the MEMICS 2006 seminar, Mikulov
  Member of Expert Sub-Committee No 102: “Electrical Engineering and Cybernetics“ (podoborová komise 102 „Elektrotechnika a kybernetika“), Grant Agency, CR
  Member of Expert Committee Section A, Higher Education Development Fund
  Co-editor of the Proceedings of IEEE DDECS 2006
  Co-editor of the Proceedings of MEMICS 2006
  Member of the programme committee of PAD 2006 seminar

- Drábek Vladimír: member of the programme committee of PAD 2006 seminar

- Růžička Richard: member of the organizing committee of the MEMICS 2006 seminar,

- Ohlídal Miloš: Prof. Hlavička Prize for an excellent paper given at PAD 2006 seminar on the dissertation topic of Scheduling of collective communication All-to-All Broadcast based on prediction of conflicts in interconnection networks,

- Bidlo Michal: Prof. Hlavička Prize for an excellent paper given at PAD 2006 seminar on the dissertation topic of Evolutionary design using development ,

- Bidlo Michal, Bidlo Radek, Sekanina Lukáš: Achievement Award Certificate,

- Stareček Lukáš: Prof. Hlavička Prize for an excellent paper given at PAD 2006 seminar,

- Vašíček Zdeněk: Josef Hlávka Prize 2006 for achievements in his research work,

- Schwarz, Josef:
  - member of programme committee of the international GECCO 2006 Conference, Washington, USA,
  - member of programme committee of the international CEC 2006 Conference, UK,
  - member of programme committee of the international MENDEL 2006 Conference, Brno,
  - Member of Expert Committee Section F1, Higher Education Development Fund

- preparatory work related to new forms of teaching: creation of study materials for Bc., MSc. and a new combined study programme in Czech and English,

- expert opinion on grant projects, conference papers, journal articles and students work.
III.5. Computer Centre

The Computer Centre is an integral part of the Faculty of Information Technology. The centre guarantees the operation of computer laboratories, local and faculty computer network, servers and information systems. The computer laboratories in the Centre are utilised both for the scheduled teaching hours and working on projects, diploma projects and research projects. Apart from the scheduled teaching hours the laboratories are open to all students of the FIT.

Staff

Head of the Centre
Lampa Petr, Ing.

Deputy Head
Čejka Rudolf, Ing.

Computer Centre Operation
Dupalová Helena

System Integrator
Gaďorek Petr, Ing.

Information System Administrator
Michal Bohumil, Ing.

Computer Network Administrator
Lampa Petr, Ing.

OS Administrators
Čejka Rudolf, Ing.
Kašpárek Tomáš, Ing.

Technical Staff
Kappler Karel
Kreslík František, Ing.

Programmer
Skokanová Jana, Mgr.

Computer Centre Service
Cvrčková Pavla
Habrdová Stella
Nečasová Milena
Pagová Ywetta
Samsonová Radomíra

Audio/Video Devices Maintenance
Juříček Zdeněk

Equipment

As for the operation of servers and computer network, 2006 was a milestone. Due to the establishment of the faculty in 2002 and its fast development, the number of servers in operation went up and the room of computer node in section D of Božetěchova 2 premises became insufficient as far as power demand and cooling were concerned. Provisional measures such as closing down the A015 computer laboratory and converting it into a computing node room was a makeshift solution of the situation. In 2006, a radical change occurred: the whole network and computing node was transferred into the new L building in
Božetěchova 1 area. The new node has been designed and built in view of further development and future increase in computing capacity. The room is cooled from a central redundant source, it is backed up from a 60kVA central back-up source, and it has its own supply generator in case of a long power failure. The servers are placed in nine open 19’’ cabinet. Each cabinet contains a distributed KVM switch, patch panel of structured cabling and three independently fused 230V sockets. All servers are linked through a gigabit Ethernet technology directly to the active backbone element.

Teaching and Research Laboratories

- Laboratories with PCs and Windows XP/Linux systems (120 workstations)
- Six unscheduled computer laboratories open to all students of the faculty (120 workstations)

Special Instrumentation and Computers

- IBM BladeCenter server with 12 modules each with two Intel Xeon 2,8 GHz processors, 1 GB RAM and 40 GB system disk. The modules are linked to an internal gigabit switch and each of them has a capacity of a server.
- IBM BladeCenter server with 14 modules each with two Intel Xeon 3,2 GHz processors, 2 GB RAM and 36 GB disk.
- A HP DL385G1 computing server, 2 AMD Opteron 2,8 GHz processors, 8 GB RAM, 280 GB HDD.
- A Supermicro 7043P research server, 2 Intel Xeon processors, 3,06 GHz, 2 GB oper. memory.
- Three SuperMicro SC933 file servers with RAID-5 disk arrays with a total capacity of 6,4 TB for speech signal storing and processing
- Four SuperMicro SC933 video servers, 2 Intel Xeon processors, 3,6 GHz, 2 GB RAM, each with a RAID-5 disk array with a 3,6 TB capacity
- A students’ server (Web, e-mail, file server), 2 two-core Intel Xeon/Core2 processors, 4 GB RAM, RAID-5 disk array with a capacity of 700 GB.
- Novell NetWare students and staff server with 2 Intel Xeon processors, 2 GB RAM and RAID-5 disk arrays of 1,6 TB and 700 GB capacity.
- FTP archive with a RAID-5 disk array, 1,2 TB capacity.
- Data distributive server with an Intel Xeon processor, 2 GB RAM and a RAID-5 disk array, 600 GB capacity.
- A SuperMicro 6023P server of the faculty information system, 2 Intel Xeon processors, 3 GB RAM, a RAID-1 disk array, 280 GB.
- A SuperMicro 6024H faculty web server, 2 Intel Xeon processors, 2 GB RAM, a RAID-5 disk array, 300 GB.
- A Overland Neo 4200 back-up library with two LTO3 drives and a total back-up capacity of 48 TB (96 TB with compression).
Software

- systems and Microsoft application software in Campus 3 licence.
- Sun Grid Engine for computations in clusters.
- A database server and Oracle 9i/10i development tools (within the academic programme of Oracle).
- Microsoft Operating Visual Studio and Microsoft Project development environments within the licence of MSDN Academic Alliance.
- Caché post-relational database system (a gift from InterSystems Corporation within the ‘Caché Campus Program’).
- Object-oriented CASE system Paradigm Plus by Computer Associates.
- OrCAD Caddence design system.
- FPGA and ASIC MentorGraphics ModlSim design system.
- Adobe Photoshop, Acrobat Distiller and Premiere, Autodesk 3D studio, Caligari TrueSpace.
- GNU Open Software, Mozilla, Tex, Linux, FreeBSD, MySQL, Apache, PHP5, etc.

Tuition

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<th>Rozsah</th>
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<td>OS2</td>
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<td>S 6</td>
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<td>W 5</td>
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</table>

Research Projects

Research leader: Černocký Jan
Team leaders: Kašpárek Tomáš, Matějka Pavel, Schwarz Petr

Faculty Open Computer Laboratories, FRVŠ MSMT, FR2031/2006/Ac, 2006, completed
Research leader: Lampa Petr
Team leaders: Kašpárek Tomáš, Michal Bohumil

Research leader: Švéda Miroslav
Team leader: Ryšavý Ondřej

Virtual Medical -Technological Laboratory for 3D Human Tissue Modelling, CESNET, 161/2005, 2006, running
Research leader: Kršek Přemysl
Team leaders: Černochová Pavlína, Kašpárek Tomáš, Krupa Petr, Pečiva Jan, Stoklas Jiří, Španěl Michal
**Research leader:** Matoušek Petr
**Team leaders:** Čejka Rudolf, Ščuglík František

**Research leader:** Novotný Jiří
**Team leaders:** Čejka Rudolf, Fučík Otto, Kořenek Jan, Kršek Přemysl, Martínek Tomáš, Matoušek Petr, Pečenka Tomáš, Smrčka Aleš, Smrž Pavel, Vojnar Tomáš, Zemčík Pavel

Recognition of Keywords and Actions in Audio Visual Data, CESNET, 119/2004, 2004-2006, running
**Research leader:** Motlíček Petr
**Team leaders:** Karafiát Martin, Kašpárek Tomáš, Sumec Stanislav

Co-operation

Co-operation the Czech Republic

International Co-operation
Operation of a non-public European data distribution server for FreeBSD operating system (ftp-master.eu.FreeBSD.org), serving as primary data source for national mirror servers

Membership in International Organizations and Societies
- Čejka Rudolf, Ing.,
  - Czech and Slovak Simulation Society
- Lampa Petr, Ing.,
  - [CSNIn](https://www.csni.org/
  - [SAGE](https://www.sage.org/

Publications

Conference Papers:


Other Activities
Čejka Rudolf, Ing., Cisco Networking Academy CCNA 1-4, instructor