From the Director

The Institute of Computer Science is one of the very few academic institutions in Poland with the longest tradition in computer research & development as well as education. The history of the Institute goes back to the year 1953 when the Division of Communications and Radio Equipment was established at the Faculty of Communications (so was called our Faculty then). In 1960, the Division has designed and built one of the first industrially produced electronic computers in Poland, called UMC1. In 1970 the Division was transformed into Institute for Construction of Mathematical Machines. Finally, in 1975 the Institute was given its present name. From the very beginning up to 1978 the Division, and then Institute was headed by the late Professor Antoni Kiliński. In 1997 his professional contribution to the field of computers was posthumously honoured with “Computer Pioneer Medal” awarded by IEEE Computer Society.

Yet another person has significantly marked the history of the Institute – the pioneer of Polish Computer Science, late Professor Pawlak, well known worldwide as the one who created Rough Sets Theory. It is worth noting that in early sixties of the last century he was one of the main contributors in building the first Polish computer UMC1. In the years 1989-1996 Professor Pawlak was Director of the Institute.

Many former staff members of the Institute and our alumni are employed by well known universities in USA, Europe and Australia.

The main activities of the Institute of Computer Science concentrate around teaching of undergraduate and graduate computer science students as well as doing research in the field of computer science. This Annual Report summarizes both types of the activities of the Institute, i.e. the teaching activities in the academic year 2008/2009, and the research activities in 2009.

Teaching in the field of computing and computers has started early in 60’s, so that the first few M.Sc. degrees in Computer Science were granted in 1962. From then on, the regular curricula in the field have been proposed. Our staff gives courses in English for the track in Electrical and Computer Engineering, offered by the Faculty of Electronics and Information Technology. Since 1995 the Institute has been running Evening Undergraduate Studies in Computer Engineering, with their own curriculum approved by the authorities of the Faculty. From 1999 on, the graduate level of evening studies is provided, and in 2001 there were first M.Sc. degrees granted. Also, since 1990 the Institute has organised (together with the Faculty’s Institute of Telecommunications) a study for postgraduate students which offer courses in computer science, telecommunications and system management, called CITCOM. In 1994 the Institute’s postgraduate studies on computer science for high school teachers have been organized. They are held continuously up till now.

Now, each year some 80-90 students receive their B.Sc. degrees, and 75-85 students are awarded with the M.Sc. degrees. Additionally, we are proud of our PhD students, of whom some 3-6 obtain their Ph.D. degrees per year.

In order to keep in line with high education standards of the Institute and to upgrade our teaching processes, the Institute has successfully applied in 2008 for the project aiming at adjusting didactic offer and teaching methodologies to the current developments of the IT market. The project is funded by Foundation for the Development of the Education System.

The Institute’s main research areas include computer graphics, information systems, data mining, artificial intelligence, computer systems’ architectures, dependable computing and software engineering. With the acknowledged excellence of our research activities the main funds for research are obtained not only from the Polish governmental authorities responsible for scientific research, but also from EU Programmes, and industry. In the framework of PF6
we have participated already in 2 projects. The cooperation with the industry has a long tradition, going back to the pioneering works in 60-ties and 70-ties of the last century. In late 90-ties we have enjoyed a cooperation with Siemens, and ERA GSM. In 2005-2007 we cooperated with France Telecom, continuing it now with its Polish research branch CBR.

In 2009 we have essentially expanded our research activities. It is worth noting that we have started a very promising cooperation with Samsung. We have also initiated a cooperation with UN organizations, in 2007 with UNEP, and in 2009 with FAO. Our cooperation with industry involves not only the Institute’s academic staff but also our Ph.D. and MSc. students, who participate in the research projects.

The outcome of the research run by the Institute staff is well reflected in our publication record. In 2009 our staff have authored and co-authored 97 publications (1 book, and 96 papers in international scientific journals, and conference proceedings, as well as chapters in the books).

The research achievements of the Institute’s staff are well recognized in the academic community. Our colleagues are invited to the programme and organizing committees of international conferences. They also often invited for reviewing papers for renowned international journals. It is my pleasure to express my appreciation to the Institute’s staff for their efforts and contributions in the Institute’s achievements in teaching and research.

Warsaw, January 2010

Henryk Rybiński
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1. GENERAL INFORMATION

1.1. Mission of the Institute

The Institute of Computer Science is one of the six institutes at the Faculty of Electronics and Information Technology, Warsaw University of Technology. The main activities of the Institute are teaching of undergraduate and graduate computer science students as well as research R&D projects in the field of computer science.

The Institute’s main research areas include computer graphics, information systems, computer systems’ architectures, dependable computing and software engineering. These research and teaching areas have influenced the organisation of the Institute: its staff is subdivided into three divisions, namely Computer Graphics, Information Systems, and Computer Architecture and Software Engineering. Each division has a dedicated set of computer facilities used for research by the Institute staff, and by students in performing their advanced projects, including the diploma projects. In addition to these three research laboratories and their specialised equipment and software, the Institute also has a common Computer Laboratory, which provides system resources, know-how and the organisational framework for the teaching process.

At the Faculty of Electronics and Information Technology the Institute is responsible for the teaching tracks in the field of computer science, including the track Electrical and Computer Engineering, which is provided in English. Our staff are involved in supervising the B.Sc., M.Sc., and Ph.D. projects. In 2008/2009 there were 79 students awarded with B.Sc. degree, 83 students awarded with M.Sc. degree, and 3 Ph.D. students awarded with Ph.D. degree.

In 2009, 55 persons were employed in the Institute of Computer Science, including 40 scholars (9 professors, 23 assistant professors with a Ph.D. degree, 1 assistant, and 7 senior lecturers). The remaining employees are the engineers, laboratory and office staff.

1.2. Noteworthy events in ’09

- The programming contests are organized at national and international level. International Collegiate Programming Contest traces its roots to competition held in 1970. Now it is organized under auspices of Association for Computing Machinery. The competition held in Poland is called Academic Championships in Collegiate Programming (Akademickie Mistrzostwa Polski w Programowaniu Zespołowym) and has been organized for 14 years. The rules for national and international contest are very similar. Students of our faculty participate in both contests. This year the Academic Championships in Collegiate Programming were held in Poznań (23-24 October) and ACM Central Europe Programming Contest in Wrocław (6-8 November). Our team (Krzysztof Krygiel, Stanisław Gąsiorowski, Piotr Płoński) competed with teams from Austria, Czech Republic, Croatia, Serbia, Slovakia, Slovenia, Hungary and Poland.

Local (at faculty level) programming contest has been organized for six years in order to form a team which competes in national and international contests. The faculty programming contest was held on 17 October at the beginning of academic year. The participants tried to solve a set of 4 algorithmic problems within 3 hours time. The solutions were implemented in C/C++ language. The final rank was based on a number of accepted solutions and time needed to solve the problems. The local contest web site is available at following address: galera.ii.pw.edu.pl/konkurs/ (in Polish).
The faculty programming contest is organized by the staff members of Institute of Computer Science Andrzej Pająk and Zbigniew Szymański and with support of Andrzej Dominik, Ph.D. student, who has created the software used during the contest.

In the summer term 2009 the Director appointed Waldemar Grabski as a faculty coordinator of co-operation with secondary schools. Waldemar Grabski also became a member of the Curriculum Council of the Open School of the Faculty of Electronics and Information Technology. As a part of the Open School programme, Jerzy Mieścicki, Ph.D., gave a lecture “What people don’t know about the information technology”.

1.3. Board of Directors

**Director**

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1.4. Organisation of the Institute

1.4.1. Division of Computer Graphics

*Head of Division: Jan Zabrodzki, Full Professor*

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Przemysław Rokita, D.Sc., Professor
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Tomasz Martyn, Ph.D., Assistant Professor
Andrzej Pająk, Ph.D., Assistant Professor
Jacek Raczkowski, Ph.D., Assistant Professor
Michał Rudowski, Ph.D., Assistant Professor
Janusz Rzeszut, Ph.D., Assistant Professor
Cezary Stepień, Ph.D., Assistant Professor
Rajmund Kożuszek M.Sc., Senior Lecturer
Grzegorz Mazur, M.Sc., Senior Lecturer
Henryk A. Kowalski, M.Sc., Senior Lecturer
Julian Myrcha, M.Sc., Senior Lecturer
Krzysztof Chabko, M.Sc., Senior R&D Engineer
Krzysztof Gracki, M.Sc., Senior R&D Engineer
Paweł Radziszewski, M.Sc., Senior R&D Engineer
Zbigniew Szymański, M.Sc., Senior R&D Engineer

*Research profile:* image generation and image processing: modelling and rendering, colour in computer graphics, modelling of natural phenomena and objects, real time image generation and processing (algorithms, hardware and software), virtual reality systems. Current research projects include:

- modelling and rendering of plants and their growth,
- colour spaces,
- application of image processing methods in computer graphics,
- interaction in virtual reality systems,
- data visualisation,
- document processing,
- visualisation of fractal objects,
- compositing computer generated and real images,
- computer games.

*Facilities:* The computer facilities provided for CGD members and their students consist of many PC machines networked to the Institute’s network. Graphics resources include stereoscopic viewing system, helmet VCR and other I/O devices (plotter, tablet, 3D scanner, colour frame grabber with a camera, Kodak 8660 Thermal Printer etc.). Several software systems are accessible on PCs (3DStudio, ModelView, PhotoStyler, PhotoShop, Corel Draw etc.).
Since 1993, in co-operation with Computer Science Committee of Polish Academy of Sciences, Computer Graphics Laboratory has been organising seminars entitled “Computer graphics, image processing and pattern recognition”. The seminars are held monthly during academic year and are open to public. Lectures given by invited speakers cover broad range of image-related topics ranging from research and applications to technology and art. Seminar schedules are distributed to over 150 regular attendees and published on website together with short abstracts.

1.4.2. Division of Information Systems

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Robert Bembenik, Ph.D., Assistant Professor
Jarosław Chudziak, Ph.D., Assistant Professor
Andrzej Ciemiński, Ph.D., Assistant Professor
Piotr Gawrysiak, Ph.D., Assistant Professor
Grzegorz Protaziuk, Ph.D., Assistant Professor
Dominik Ryżko, Ph.D., Assistant Professor
Piotr Parewicz, M.Sc., Senior Lecturer
Piotr Salata, M.Sc., Senior Lecturer

Research profile: practice and theory of information systems and database systems, as well as, vagueness, uncertainty and approximate reasoning, in particular – knowledge representation, data mining, reasoning about knowledge, machine learning, and the application of rough set theory in the above fields. Current research projects include:

- logical tools for semantic database description,
- development of rough set theory and its applications to knowledge discovery,
- implementation of decision support systems,
- application of developed software to vague data analysis, voice recognition, pattern recognition etc.,
- knowledge discovery, data, text, space, multimedia and WEB mining, theory and practice.

Recently research concentrates on concise representation of knowledge extracted from databases, as well as, its practical applications for text mining. Novel algorithms for extracting rules with negation have been elaborated, and are now are practically tested. Experiments are performed for using the KDD techniques for ontology building and maintenance. A specialized text mining platform (TOM) has been implemented for ontology maintenance. The platform is used for research and education.

Facilities: the computer facilities provided for ISD staff members and their students consist of 17 PC’s, all integrated into Institute’s network.
1.4.3. Division of Computer Architectures and Software Engineering

*Head of Division:* Janusz Sosnowski, Full Professor

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Witold Dziczak, Ph.D., Assistant Professor
Anna Derezińska, Ph.D., Assistant Professor
Henryk Dobrowolski, Ph.D., Assistant Professor
Piotr Gawkowski, Ph.D., Assistant Professor
Artur Krzysik, Ph.D., Assistant Professor
Roman Podraza, Ph.D., Associate Professor
Dariusz Turlej, Ph.D., Assistant Professor
Jacek Wytrębowicz, Ph.D., Assistant Professor
Krzysztof Cabaj, Ph.D., Assistant
Waldemar Grabski, M.Sc., Senior Lecturer

*Research profile:* system dependability (reliability, availability, performance, fault diagnostics and fault tolerance), advanced software engineering problems, software quality issues, advanced system and logical synthesis, formal methods and tools for system design and verification, parallel processing architectures, local area networks, embedded and real-time systems. Current research projects include:

- testing and analysis of fault effects in computer systems (hardware and software), fault injection techniques, error detection and fault handling techniques,
- modelling and formal methods for specification, design and verification of software, communication protocols, etc.,
- distributed system design problems, including multi-agent and SOA systems, robotic agents,
- modern technologies of software design and development, system life cycle, project management, model driven engineering, component based and aspect programming, data analysis tools, data mining applications.

*Facilities:* Division laboratory is equipped with server Windows 2008, multiprocessor workstation (two dual core Opteron 280 processors - 4 cores, RAID 5 disk array, 8 GB ECC RAM), Dell 320 workstation and several PCs connected to local and faculty network. This equipment is designated for research purpose and students’ projects as well. In addition to this there is a special stand for experiments with multi-agent systems (embodied agents represented by small mobile robots), real time systems and a simulation platform for tracing fault effects in computer systems. Various specialized software packages are available (locally and remotely) for research and educational purposes.

In 2009 a series of seminars has been organized devoted to dependable computing problems, embedded systems and software engineering. In particular they resulted in cooperation with other scientific groups and industry.
1.4.4. Computer Laboratory

Head: Marek Pawłowski, M.Sc. (1977)
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Activity profile: The Computer Laboratory provides computational facilities and services for both teaching and research carried out in the Institute. It consists of several laboratories dedicated to programming, hardware design, performing different software and hardware projects (i.e. diploma theses).

Facilities: The resources of the Computer Laboratory are closely integrated with other computer resources of the Institute (the research laboratories, staff-members’ personal computers) into one, multiprotocol, heterogeneous network. This LAN consists of several main servers (SUN SPARC\textsuperscript{1}, IBM pSeries, LINUX, Windows Advanced Servers) and large number of PCs and workstations. All computers at the Institute have full access to the University's campus network and to the Internet.

The Software division of the Computer Laboratory supports various operating systems (AIX, Solaris, LINUX, Windows) and various applications (compilers, simulators, CASE tools, office programs, etc.) – including advanced software packages such as Visual.Net Studio, ORACLE RDBMS, IBM DB2, IBM Rational, Delphi, Eclipse, SQL Server, PowerBuilder, PowerDesigner, and many others.

The Hardware Division of the Computer Laboratory is equipped with specialised hardware development workstations, each consisting of a modular microprocessor/hardware assembly system (DSM, SML3), linked to a personal computer. Oscilloscopes and development systems for several types of microprocessor are provided as additional equipment.

As a result of cooperation with Texas Instruments, new equipment consisting of digital signal processors’ development kits has been obtained. There are eZdsp6713 Kit, eZdsp5416 Kit, eZdspF2812 Kit, eZdspF2808 Kit, TMS320VC5505 DSP Evaluation Module, MSP430 USB Debugging Interface, MSP430F55xx USB 80-Pin Target board, F28035 Piccolo Experimenter’s Kit, Delfino C28343 Experimenter’s Kit, Delfino C28346 DIM168 Experimenter’s Kit, C2000 Peripheral Explorer Kit, Dual Motor Control and PFC Developer’s Kit and C2000 Renewable Energy Developer’s Kit in laboratory linked to the computers with Code Composer Studio v4 (and v3.3) software. This equipment is used for digital signal processor architecture and programming courses, preparation of B.Sc. and M.Sc. theses, research and scientific work in the field of real time systems and ECG signal analysis.

In 2007 the research resources of the Institute have been enhanced with two powerful multiprocessor servers (Sun X4600M2: 16-core; 32 GB RAM; and IBM p550: 8-core, 32 GB RAM). These servers cooperate with common disk matrices from Hitachi (capacity over 10TB) together with ambient switches and routers. Moreover, the Institute has been equipped with a comprehensive test system Agilent N2X, which is dedicated for validating the performance and scalability characteristics of next-generation network traffic and protocols. The equipment has been funded by Ministry of Science and Higher Education. The system is now widely used by the staff and graduate students of both our Institute, as well as, the Institute of Control and Computation Engineering.

\textsuperscript{1} in Faculty’s Laboratory
2. STAFF

2.1. Senior academic staff

Robert BEMBENIK, M.Sc. (2001), Ph.D. (2007); Computer Science, Databases, Spatial Databases, Data Mining, Assistant Professor, Information Systems Division; [Edu8]; [Pub27].

Grzegorz BLINOWSKI, M.Sc. (1993), Ph.D. (2001); Assistant Professor; Computer Science, Division for Computer Architecture and Software Engineering; [Edu15]; [BSc10], [BSc38], [BSc79], [MSc59]; [Pub76].

Ilona E. BLUEMKE, M.Sc. (1978), Ph.D. (1989); Assistant Professor; Computer Science; Division for Computer Architectures and Software Engineering; Member of the Polish Computer Society (1980-); Member of Technical Committee on Software Engineering IASTED (2001); Rector's Award in Education (2005); Rector's Award in Science (2008); [Edu7], [Edu21], [Edu33], [Edu34], [Edu65], [Edu67], [Edu84], [Edu93]; [BSc13], [BSc36], [BSc70], [MSc16], [MSc34], [MSc57], [MSc65]; [Pub2], [Pub3], [Pub18], [Pub53], [Pub66], [Pub80].

Bohdan BUTKIEWICZ, M.Sc. (1964), Ph.D. (1972), D.Sc. (2003); Fuzzy systems, Reliability theory, Control theory; Professor; Circuit and Signal Theory Division; Member nominated of the faculty; IEEE Member (1991-); IEEE Systen, Man. and Cybernetic Society Member, IEEE Computational Intelligence Society Member, IEEE Computational Intelligence Society Member. [Pub4], [Pub5], [Pub52], [Pub60], [Pub61].

Jerzy R. CHRZĄŚCZ, M.Sc. (1986), Ph.D. (1994); Assistant Professor; Microprocessor Systems and Programmable Logic, Computer Graphics Division; Member of the Curriculum Committee (1994-1995); Secretary of Seminar on Computer Graphics, Image Processing and Pattern Recognition (1993-); Member of the Polish Information Processing Society (1986-); Rector's Award in Education (1992), (2002); Minister of Education Award (1995); [Edu17], [Edu59], [MSc14], [MSc46] [MSc58], [MSc74].

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Henryk DOBROWOLSKI, M.Sc. (1975), Ph.D. (1986); Assistant Professor; Computer Science, Division for Computer Architectures and Software Engineering; Rector’s Award in Science (1996), (1999), (2003); Siemens Award in R&D Projects (1996); Deputy Director for Research (2001-2008); Rector’s Award in Education (2002); Member of ACM (2006); [Edu3], [Edu28], [Edu52], [Edu68], [BSc7], [BSc24], [BSc41], [BSc75], [MSc62].

Piotr GAWKOWSKI, M.Sc. (1998); Ph.D. (2005); Computer Science, Assistant Professor; Division for Computer Architecture and Software Engineering; Rector’s Award (2003), (2006), (2008), (2009); member of IEICE (2002-2008); [Edu15], [BSc39], [BSc60], [BSc63], [MSc13], [MSc15], [MSc19], [MSc51], [MSc67], [MSc83], [Pub22], [Pub8], [Pub57], [Pub67], [Pub68], [Pub70], [Pub86], [Rap3].

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3. TEACHING ACTIVITIES

3.1. Basic courses offered by the Institute

Each item listed below specifies the course title (e.g., Computer Architecture), its acronym or code (e.g., ARKO), number of hours per week (lecture, classes, laboratory, project hours respectively, e.g., ‘3-1-’ means per week three hours of lecture, no classes, one hour of lab, and no project), its placement in the curriculum (e.g., ‘undergraduate course for CSE students’) and the name of the person(s) responsible for the course. Persons marked with an asterisk (*) are not employed in the Institute.

**Undergraduate courses for CSE students**

[Edu1] Analysis of Algorithms (AAL, 2-2-); A. Pajak
[Edu2] Algorithms and Data Structures (AISDI, 2-1-); R. Podraza
[Edu6] Computer Networks 2 (SKM2, 2-11); J. Wytrębowicz
[Edu7] Compiling Techniques (TKOM, 2--2); A. Pajak; I. Bluemke
[Edu9] Databases Systems (BD2, 2--1); P. Salata
[Edu10] Digital Electronics (ECY, 211-); J. Rzeszut
[Edu11] Digital Systems Design (PUCY, 2--1); M. Pawłowski
[Edu12] Event-Driven Programming (PROZ, 2--1); R. Podraza
[Edu14] Interactive Applications Programming (PAIN, 2-1-); W. Grabski
[Edu15] Internet Techniques (TIN, 2--1); G. Blinowski, P. Gawkowski, P. Gawrysiak, J. Wytrębowicz, P. Radziszewski
[Edu16] Introduction to Computer Science (WI, 3---); W. Daszczuk
[Edu18] Object Oriented Programming (PROI, 2-2-); A. Pajak
[Edu20] Peripheral Devices and Interfaces (UZINT, 2-1-); J. Sosnowski
[Edu21] Software Engineering 2 (IOP2, 2-1-); I. Bluemke, A. Dereźnińska
[Edu22] Systems and Networks Security (BSS, 2-1-); P. Kerntopf
[Edu23] Symbolic Data Processing Languages (JPS, 2---1); P. Parewicz

**Elective courses for CSE students**

[Edu24] Computer Games Programming (PGK, 2-11); T. Martyn
[Edu26] Data Warehouses (ZBD, 2-1); J. Chudziak
[Edu27] DSP Processors (PS, 2--2); H. Kowalski
[Edu28] Embedded Systems (SWB, 2-11); H. Dobrowolski
[Edu29] Introduction to Text Data Exploration in WWW (WEDT, 2--1); P. Gawrysiak
[Edu30] ORACLE System Architecture and Database Administration (ORACL, 2-1-); M. Rudowski
[Edu31] Rapid Application Prototyping Tools (NTR, 2-2-); J. Myrcha
[Edu32] System's Programming in Windows NT (PWNT, 2--1); A. Krystosik
[Edu33] UNIX System Architecture, Programming and Administration (UXP1A,2--1,); G. Blinowski

Advanced courses (graduate level)

[Edu34] Advanced Methods of Software Development (ZMWO, 2-1-); I. Bluemke, A. Derezińska
[Edu35] Advanced Topics in Data Base Systems (ZPBD, 2--1); H. Rybiński
(Edu37) Data Mining Methods (MED, 2-11); M. Kryszkiewicz
[Edu38] Dependable Computer Systems (WSK, 2--1); J. Sosnowski
(Edu39) Digital Image Processing (POBR, 2-11); P. Rokita
[Edu40] Distributed Systems (SR, 2-1-); A. Krystosik
(Edu41) Fundamentals of Theoretical Computer Science (PTI, 21--); P. Kerntopf, K. Walczak
(Edu42) Intelligent Information Systems (ISI, 2--1); M. Muraszkiewicz
(Edu43) Pattern Recognition (ROB, 2-1); R. Kołużek
[Edu44] Programming in Logic (PLOG, 2--1); K. Walczak

Courses for Evening Undergraduate Studies in Computer Science

[Edu45] Administration of UNIX (UNIX, 1-1-); Z. Michalski*
(Edu46) Algorithms and Data Structures (AISDA, 2-1-); R. Podraza
(Edu47) Application Programming in Windows (PAW, 1-1-); W. Grabski
(Edu48) CAD/CAM Systems (SYSCA, 1-2-); M. Bossak(*)
(Edu49) Computer Architecture (AKO, 2-1-); D. Turlej
(Edu50) Computer Graphics and Image Processing (GPOB, 2-2-); J. Zabrodzki
(Edu51) Computer Networks (SIEKO, 2-2-); J. Wytrębowicz
(Edu52) Computer Systems (SYSKO, 2--); H. Dobrowolski
(Edu53) Data Bases (BADA, 2-2-); D. Ryżko
(Edu54) Digital Integrated Circuits (CUS, 2-2-); J. Rzeszut
(Edu55) DTP Systems (SYDTP, 1-2-); C. Stępień
(Edu56) Fundamentals of Digital Technology (PTCYF, 2-2-); A. Skorupski
Courses for Evening Graduate Studies in Computer Science

[Ed59] Hardware Project (PROJ2, ---2); G. Mazur
[Ed60] Introduction to Computer Science (WDI, 1--); J. Mieścicki
[Ed61] Microprocessor Systems (SYSM, 2--2); J. Chrząszcz
[Ed62] Oracle System Administration (ASO, 1-1-); M. Rudowski
[Ed63] Object Oriented Programming (PROGO, 2-2-); R. Kożuszek
[Ed64] Operating Systems (SYSOP, 2-1-); D. Turlej
[Ed65] Personal Computer (PCET, 2-2-); G. Mazur
[Ed66] Programming in Java (PROGC, 2-2-); R. Podraza
[Ed67] Software Project (PROJ1, ---2); I. Bluemke
[Ed68] Software Tools and Systems (OUK, 1-3-); Z. Rozwadowski(*)
[Ed69] Advanced Programming (ZAAP, 2--1); A. Krystosik
[Ed70] Advanced Problems of Data Base Systems (ZPSBI, 2--2); H. Rybiński
[Ed71] Analysis and Design of Information Systems (AIPS1, 2--2); A. Ciemski
[Ed72] Artificial Intelligence Methods (MSZI, 2—1); W. Traczyk*
[Ed73] Computer Networks Security (BSK, 2-2-); R. Kossowski*
[Ed74] Compiling Techniques (TEKO, 2--1); A. Pająk
[Ed75] Dependable Computer Systems (WISK, 2--1); J. Sosnowski
[Ed76] Dependable Computer Systems (WISK, 2--1); J. Sosnowski
[Ed77] Digital Image Processing (CPOM, 2--1); P. Rokita
[Ed78] Digital Signal Processing (CPSM, 2-1-); Z. Gajo*
[Ed79] Distributed Systems (SYRO, 1-1-); T. Kruk*
[Ed80] Fundamentals of Theoretical Computer Science (POTI, 21--); P. Kerntopf

3.2. English language Computer Science Courses

The Institute of Computer Science provides the following courses to the students of English-language Electrical and Computer Engineering Studies. The course title, its code, the number of credit points and the name of the person responsible is given for each item.

[Ed81] Algorithms and Data Structures (EADS, 211-) (E); R. Podraza
[Ed82] Computer Architecture (ECOAR, 211-) (E); G. Mazur
[Ed84] Computer Networks (ECONE, 211-) (E); J. Wytrębowicz
[Ed85] Compiling Techniques (ECOTE 211-); I. Bluemke
[Ed86] Data Bases (EDABA, 211-); H. Rybiński
[Ed87] Data Mining (EDAMI, 2--2); M. Kryszkiewicz
3.3. Special courses

[Edu94] Algorithmic Problems and Programming in C++; Postgraduate Studies For Teachers in Computer Science, A. Pająk

[Edu95] Computer Graphics; Postgraduate Studies For Teachers in Computer Science, C. Stępień, R. Kożuszek

[Edu96] Computer Hardware; Postgraduate Studies For Teachers in Computer Science, G. Mazur

[Edu97] Data Bases; Postgraduate Studies For Teachers in Computer Science, W. Kamiński

[Edu98] Edition of School Internet Portals; Postgraduate Studies For Teachers in Computer Science, Z. Szymański

[Edu99] Event Programming – Delphi; Postgraduate Studies For Teachers in Computer Science, K. Gracki

[Edu100] Introduction to Computer Science; Postgraduate Studies For Teachers in Computer Science, R. Kożuszek

[Edu101] Internet; Postgraduate Studies For Teachers in Computer Science, P. Radziszewski

[Edu102] Introduction to C++ Programming; Postgraduate Studies For Teachers in Computer Science, R. Podraza

[Edu103] Introduction to Java; Postgraduate Studies For Teachers in Computer Science, R. Podraza

[Edu104] Linux Operating System; Postgraduate Studies For Teachers in Computer Science, Z. Szymański

[Edu105] Multimedia; Postgraduate Studies For Teachers in Computer Science, K. Chabko

[Edu106] Programming – Project; Postgraduate Studies For Teachers in Computer Science, K. Gracki

[Edu107] Project; Postgraduate Studies For Teachers in Computer Science, C. Stępień, J. Zabrodzki

[Edu108] School Computer Network Administration; Postgraduate Studies For Teachers in Computer Science, Z. Szymański
[Edu109] Software Tools; Postgraduate Studies For Teachers in Computer Science, R. Kożuszek, Z. Szymański

[Edu110] Spreadsheets; Postgraduate Studies For Teachers in Computer Science, M. Kryszkiewicz

[Edu111] Teaching Methods – Computer Science; Postgraduate Studies For Teachers in Computer Science, Z. Nowakowski


[Edu113] Windows Operating System; Postgraduate Studies For Teachers in Computer Science, K. Chabko

[Edu114] Word Processing and Desk Top Publishing; Postgraduate Studies For Teachers in Computer Science, C. Stępień
4. RESEARCH PROJECTS

4.1. Projects granted by the University

4.1.1. Projects granted by the Dean of the Faculty of Electronics and Information Technology

[Pro1] Henryk Rybiński, Professor – Head of the project: “Development of new methods and algorithms in the following areas: (1) computer graphics, (2) artificial intelligence, and information systems; and (3) distributed systems”, (in Polish – Rozwój nowych algorytmów w obszarach: grafiki komputerowej, sztucznej inteligencji, systemów informacyjnych oraz systemów komputerowych). 16 June 2009 – 31 March 2010.

4.2. Projects granted by the Ministry of Education and Science

[Pro2] Janusz Sosnowski, Professor – Head of the project No. 4297/B/T02/2007/33; 8 October 2007 – 7 October 2010, “Developing a methodology of evaluating computer system reliability and performance”, (in Polish – Rozwój metodyki oceny niezawodności i wydajności systemów komputerowych). Abstract: The project relates to dependable computing problems. The planned research is aimed at developing a special software environment for the analysis of critical problems in computer systems, validating its behaviour, etc. In particular we will develop efficient fault injection tools, which will allow analysing fault effects in real applications. The theoretical ideas and developed tools will be verified for various classes of applications (calculation oriented and real-time). The developed simulation environment will be enhanced with various statistical tools co-operating with system logs, etc. The developed tools will be used to optimise test scenarios, reliability and availability. New error detection and error handling techniques will be proposed and verified. To verify the proposed methodology and developed tools we will create a benchmark of various applications covering different operational and performance profiles. For these applications we will generate representative input data, checked with various coverage analyses (including program mutation techniques). Various measures to evaluate different properties of software applications will be proposed. This research will be extended with a new methodology of collecting data on reliability and performance of computer systems (data exploration and statistical correlations analysis techniques). Collective project.

[Pro3] Henryk Rybiński, Professor – Head of the project No. N N516 378136; 09 March 2009 – 30 May 2010, “Distributed Default Reasoning in the Semantic Web”, (in Polish – Rozproszone wnioskowanie w Sieci Semantycznej przy użyciu logiki domniemani). Abstract: The aim of the dissertation is to develop algorithms for distributed reasoning with description logics extended with default rules. A model of a multi-agent system will be designed, which takes advantage of DDDL (Distributed Description Logic with Defaults). A prototype system will be implemented in order to confirm the correctness and efficiency of the proposed solutions. Experiments will be conducted using the prototype system. Participant: Przemysław Więch, Ph.D. Student.

Abstract: Relational database management systems (RDBMS) have been under continuous development for over three decades. Their complexity makes the administration process requires much experience and highly specialized knowledge. Any methods for reducing the costs of administration are nowadays in great value. These methods usually employ some fully or partially autonomic components. One of the common tasks required for autonomic operation of the RDBMS is optimal index selection. The index selection process must not impose any significant runtime and memory overhead on the operation of the RDBMS. The state-of-the-art greedy index selection heuristics often do not provide solutions of sufficient quality, while the global optimization methods leveraging the “what-if” approach are not efficient enough in autonomic applications. The aim of the research is to create a method that provides better and faster autonomic index selection than the state-of-the-art algorithms. The method should be applicable to database workloads that change their characteristics over time. The preliminary experiments have shown that the evolutionary searching of the space of query execution plans (as opposed to commonly used searching of the space of index configurations) yields fast convergence to good solutions. The proposed algorithms will be theoretically analyzed, implemented in Java and experimentally evaluated for various real-world and synthetic database workloads. The results will be compared to the methods currently used in commercial RDBMS. Participant: Piotr Kołaczkowski Ph.D. Student.


Abstract: Nowadays large amounts of data can be collected and stored, thus data mining is used in almost every domain of our life. Nevertheless, users are afraid of revealing sensitive values about themselves, because provided data and hidden knowledge discovered by data mining can be misused. It makes gathering high quality data harder. The goal of preserving privacy is to encourage people to provide true information, even about sensitive values. It also enables organizations to provide data with the possibility to discover hidden knowledge from it, but without revealing the individual characteristics of the objects, i.e., customers. In privacy preserving, the information can be hidden either on an individual or aggregate level. In the former case, the individual characteristics about the objects are not revealed. In the latter, the knowledge which could be discovered by a data miner is hidden. One of the privacy preserving methods used for hiding information on the individual level is the value distortion. For continuous attributes, random noise is added to original values. For nominal attributes, the original values of attributes are changed according to a given probability distribution. Only distorted values are stored. The value distortion method enables a data miner to store data in a centralized database. This method causes trade-off between a privacy level and accuracy. The higher level of privacy,
the lower accuracy of the results we have. It is a challenge for data miners. Thus, new more effective privacy preserving classification and association rules mining algorithms for centralized data will be proposed. Ordered attributes, meta-learning, and hierarchical combining of classifiers will be used to reduce accuracy loss. Moreover, the modification of the association rules mining algorithm shall reduce time complexity. The experimental system will be used to test new algorithms and compare them with the existing solutions. Participant: Piotr Andruszkiewicz Ph.D. Student.

4.4. Other projects

[Pro6] Project – Rich Internet Application infrastructure for mobile device and Mobile Wikipedia Application. Professor Henryk Rybiński, 24 December 2008 – 2 November 2009. Collective project for Samsung Electronics Polska Sp. z o.o. Abstract: The objective of the project is to design and implement a platform for Rich Internet Application for a mobile device. Rich Internet Applications eliminate some drawbacks of HTML applications (e.g., page reloading) and have some of the characteristics of desktop applications. Moreover, Rich Internet Applications use Internet connections in more efficient way – work also in off-line mode and synchronise data. The result of the project is the implementation of Rich Internet Application platform for a mobile device and Mobile Wikipedia Application for this platform. The application is to work also in off-line mode and synchronise articles with Wikipedia.


[Pro8] Project – S2B Science 2 Business Innovation Incubator. Dr. Piotr Gawrysiak, 31 July 2009 – 30 June 2012. Collective project for Fundacja na Rzecz Budowy Społeczeństwa Opartego na Wiedzy “Nowe Media”. Abstract: “S2B Science 2 Business Innovation Incubator” is a technology incubator programme, operated by a consortium of Polish universities and private companies funded within objective 3.1 of the Ministry of Economy Operational Programme Innovative Economy. It aims to proactively identify innovative technology projects that could be carried out by alumni or students of the faculty and incubating them up to the moment when the project can be commercialized. The incubation would include not only financial backing, but also logistics support and direct help to project authors from Institute of Computer Science researchers.

[Pro9] Project No. FSS/2009/II/D5/W/0032/U/007 – Adjusting didactic offer and teaching methodologies to current developments of IT market. Professor Henryk Rybiński, 1 July 2009 – 30 June 2010. Collective project for Fundusz Stypendialny i Szkoleniowy. Abstract: Rapid development of the IT market both in Poland and globally (related to a growing significance of Internet) made this research and education domain an important leverage for economic and social
growth. This technological progress however has mostly happened outside academic grounds and is an outcome of innovative approach of entrepreneurs and consequent R&D activities of multinationals. As a result of that, the didactic offer of the Institute of Computer Science (but also of a number of other academic institutions in Poland) became at least partially out-dated, and its graduates lack state-of-the-art knowledge which makes that less competitive on the labour market. In order to keep in line with high education standards of the Warsaw University of Technology and to prepare highly qualified graduates, the Institute of Computer Science decided to undertake the project aiming at adjusting didactic offer and teaching methodologies to current developments of the IT market. The said project will be composed of 3 main tasks described here: 1. Preparation of new courses: Computational intelligence and cognitive science, Multi-agent systems, Geographical-information systems, Mobile application development, Cataloguing and fuzzy systems. 2. Preparation of new laboratories: Virtualisation technologies, Data-mining methods. 3. Re-view of existing courses: Data-bases, Advanced problems of data-bases, Advanced methods for software engineering. The outcome of the project is an increase of the teaching quality both on graduate and postgraduate levels in the field of computer sciences. The specific project outcomes are as follows: increase of competitiveness of the graduates of the Faculty in the marker (labour market), greater competitiveness of the Institute of Computer Science compared to other teaching institutions in Europe.

[Pro10] Project No. PR 43431 – Design and implementation of a new WWW-ISIS software for both Windows and Linux platforms. Professor Henryk Rybiński, 1 December 2009 – 30 November 2010. Project for FAO. Abstract: The goal of the project is to build a fully fledged schemaless database along with the RAD tools for building repositories with advanced text retrieval functionalities. The main planned feature of the solution is to provide compatibility with the CDS/ISIS approach in terms of formatting language, and with WWW-ISIS in terms of tools for building applications. The system will be based on the FOSS solutions, with Lucene as the search engine and a relational database (SQLite or PostgreSQL) as a storage for XML records. The first application planned for the new system is upgrading the FAO system FAOLEX (in terms of database maintenance functionality, as well as web based search interfaces).

[Pro11] Project No. 36/09 – Feasibility study and techniques analysis for service discovering and composition by Multi-Agent Systems with natural language interface (in Polish – Analiza wykonalności narzędzi i przeglądu technik odkrywania i kompozycji usług przy systemach wieloagentowych z uwzględnieniem obsługi w języku naturalnym). Dr. Dominik Ryżko, 15 August 2009 – 30 December 2009. Project for Telekomunikacja Polska S.A. Abstract: The project analyses the possibilities of application of Multi-Agent Systems (MAS) for service discovery and composition in the Orange Group. State of the art in this area is analysed and main directions in the current research are underlined. Later on tools applicable for building a MAS based service delivery platform are described. A plan for building a prototype of such a system is proposed. Additionally, means of natural language communication with the system will be presented.

[Pro12] Project No. 39/09 – Automation of semantic rule creation for voice services at FT and TP with natural language speach recognision (in Polish – Automatyzacja

Abstract: The project covers current state of semantic analysis in the FT dialog services, drawbacks and bottlenecks of used methods and technology. In the second part the authors show possible solutions, potentially improving the process in the context of semantic analyzing. The general aim of this report is to focus on drawbacks of the present semantic analyser and proposals for improving its work. All our solutions could be divided into two parts. First proposals concern speech tagging and process of building semantic rules. Next improvements are much more closely connected with FT semantic analyzer – achieve more efficient rule matching and rule reasoning in the voice services.

4.5. International co-operation

[IC1] Visit of Professor Zbigniew Raś from University of North Carolina, Charlotte, USA, October-November, 2009, invited lectures: “Knowledge Systems”.

[IC2] Visit of Professor Jan Rauch from University of Economics, Prague, Czech Republic, November, 2009, lecture: “GUHA method as a KDD tool”.

[IC3] Visit of Professor Janusz Sosnowski in University of Queensland in Brisbane (Australia). The goal of this visit was an exchange of experience in designing dependable embedded systems and finding cooperation areas. During this visit an original laboratory on unmanned avionic vehicles was presented.

5. TITLES AND DEGREES AWARDED

5.1. Ph.D. Degrees


5.2. B.Sc. and M.Sc. Degrees

For each B.Sc. and M.Sc. thesis listed below, the name of the scientific supervisor and the final grade awarded by the reviewers follow the author’s name and the title of the thesis. The notes are provided in parentheses. They range from (excellent) through 5 (very good), 4 (good), to 3 (acceptable), with possible values in between (e.g., 4.5). The theses are generally written in Polish and they are available in the library of the Institute. The theses marked with an asterisk (*) are written in English.


[BSc4] Bieszalska Katarzyna Zofia, Bieszalska Magdalena Marta, *Design and implementation of a Web-based application using .NET Framework 3.5*, supervisor: Henryk Rybiński, (5)*

[BSc5] Biliński Piotr Paweł, *An experimental multi-agent system for distributed project management*, supervisor: Jacek Wytrąbowicz, (5)*


[BSc7] Buczkowski Piotr, *Project and implementation of simultaneous localisation and mapping algorithm of working environment of mobile robot* (in Polish – Projekt i implementacja algorytmu jednoczesnej lokalizacji i budowy mapy środowiska operacyjnego robota mobilnego), supervisor: Henryk Dobrowolski, (4,5)

[BSc8] Bugaj Mateusz, *Particle systems in visualisation of natural phenomena in real time* (in Polish – Systemy cząsteczkowe w wizualizacji zjawisk naturalnych w czasie rzeczywistym), supervisor: Krzysztof Chabko, (4)


[BSc18] Gieszczyk Jakub, Płatek Piotr, *The project and implementation of system for archiving and analyzing operating parameters of webMethods Integration Platform* (in Polish – *Projekt i realizacja systemu archiwizacji i analizy informacji o działaniu platformy webMethods*), supervisor: Mariusz Kaleta, (5)


[BSc25] **Jastrzębski Maciej**, *Digital radio control utilizing a microprocessor and the ZigBee protocol* (in Polish – Cyfrowe sterowanie radiowe z użyciem mikroprocesora oraz protokołu ZigBee), supervisor: Henryk Kowalski, (5)

[BSc26] **Karolewski Łukasz**, *Business application integration platform based on Microsoft Workflow Foundation* (in Polish – Platforma integracji aplikacji biznesowych oparta o Microsoft Workflow Foundation), supervisor: Michał Nowacki, (4,5)

[BSc27] **Kołodzieczyczyk Mateusz**, *Using mobile devices to kinematics measurements and analysis of the measurement results, during sports driving on a race-track* (in Polish – Wykorzystanie urządzeń mobilnych do pomiarów i analizy wielkości kinematycznych, podczas ruchu pojazdu na torze wyścigowym), supervisor: Piotr Gawrysiak, (5)


[BSc29] **Kot Maciej**, *Soft body animation* (in Polish – Animacja ciał plastycznych), supervisor: Krzysztof Gracki, (5)


[BSc31] **Kowalczyk Łukasz**, *Simple tools for Internet Portals generation* (in Polish – Narzędzie do generowania prostych portali Internetowych), supervisor: Jan Zabrodzki, (4)


[BSc33] **Kozik Michał**, *Online email client using Silverlight technology* (in Polish – Klient pocztowy online wykorzystujący technologię Silverlight), supervisor: Piotr Gawrysiak, (excellent)

[BSc34] **Krawczyk Kamil**, *Mesh simplification techniques for the Level of Detail* (in Polish – Techniki upraszczania obiektów poligonalnych na potrzeby metod Poziomu Szczegółów), supervisor: Paweł Cichocki, (5)


[BSc36] **Lipiński Michał**, *BPMN Business process server based on PeopleSoft CRM* (in Polish – Serwer procesów biznesowych oparty na notacji BPMN w technologii PeopleSoft CRM), supervisor: Ilona Bluemke, (4,5)

[BSc37] **Luberecki Kamil**, *Web-based real estate directory*, supervisor: Grzegorz Protaziuk, (5)*


Maźnińska Anna, *Content based image retrieval* (in Polish – Wyszukiwanie obrazów na podstawie zawartości), supervisor: Przemysław Rokita, (5)

Madejski Krzysztof, *Review of operating systems for the Lego Mindstorms NXT. Design and implementation of a state machine interpreter under nxtOSEK real-time operating system* (in Polish – Przegląd systemów operacyjnych dla Lego NXT. Projekt i implementacja interpretatora automatów pod systemem nxtOSEK), supervisor: Henryk Dobrowolski, (5)


Mateusz Bartłomiej, *Implementation and testing of metaheuristic optimization algorithms* (in Polish – Implementacja i testowanie metaheuristicznych algorytmów optymalizacji), supervisor: Jarosław Arabas, (3,5)

Mączka Dariusz, *State data storage on mobile devices* (in Polish – Bezpieczne przechowywanie danych na urządzeniach mobilnych), supervisor: Michał Nowacki, (4,5)

Miszczak Marcin Paweł, *Mobile anti-theft system on Symbian S60 3rd edition platform* (in Polish – Mobilny system antykradzieżyowy na platformę), supervisor: Piotr Gawrysiak, (5)

Nowakowska Agnieszka, *Visualization of polyhedral compounds* (in Polish – Wizualizacja wielościanów gwiaździstych), supervisor: Janusz Rzeszut, (excellent)

Nowakowski Aleksander, *Light control system prototype for the intelligent house* (in Polish – Projekt systemu sterowania oświetleniem w inteligentnym domu), supervisor: Wojciech Zabotny, (5)

Nowotarski Paweł, *CSM/ECSM diagram editor tool* (in Polish – Edytor automatów CSM/ECSM), supervisor: Michał Nowacki, (5)

Ołbrys Kamil, *CRM system supporting marketing actions based on decision trees* (in Polish – System CRM wspomagający akcje marketingowe oparte o drzewa decyzyjne), supervisor: Andrzej Ciemski, (4,5)

[BSc51] Paprocki Przemysław Adam, RNAVis – platform for analyzing and visualizing ribonucleic acids (in Polish – RNAVis – platforma do analizy i obrazowania kwasów rybonukleinowych), supervisor: Robert Marek Nowak, (5)

[BSc52] Piechota Tomasz, Integrated management system for fault simulations processes (in Polish – Zintegrowany system zarządzający procesami symulacji błędów), supervisor: Jan Mulawka, (5)

[BSc53] Plutecki Michał, Practical application of R and Weka environments in data mining process (in Polish – Praktyczne zastosowanie środowiska R oraz Weka w procesie eksplozacji danych), supervisor: Jan Mulawka, (5)

[BSc54] Prosiński Jakub, Implementation of SOA using ESB (in Polish – Implementacja SOA z wykorzystaniem ESB), supervisor: Wiktor Daszczuk, (5)

[BSc55] Przychodzenie Michał Dawid, piGEOn – geographical data exchange system for mobile devices (in Polish – piGEOn – system wymiany informacji geograficznych dla urządzeń mobilnych), supervisor: Piotr Gawrysiak, (5)


[BSc57] Raś Kamil, Three-layer real-time application for handing transactions on the currency market (in Polish – Aplikacja trójwarstwowa czasu rzeczywistego do obsługi transakcji na rynku walutowym), supervisor: Jarosław Dawidczyk, (5)

[BSc58] Romański Piotr, Feature selection in the knowledge discovery process (in Polish – Selekcja atrybutów w procesie odkrywania wiedzy), supervisor: Wiktor Daszczuk, (5)

[BSc59] Sadowski Dariusz, IT Governance mechanisms (in Polish – Mechanizmy IT Governance), supervisor: Andrzej Zbigniew Zalewski, (5)

[BSc60] Sidoruk Grzegorz, Information system of the hospital surgical department (in Polish – System informatyczny oddziału chirurgii), supervisor: Piotr Gawrysiak, (5)

[BSc61] Sikorski Paweł, Graphics processing unit usage for solving computational massive problems (in Polish – Zastosowanie procesora graficznego przy rozwiązywaniu problemów obliczeniowo rozległych), supervisor: Julian Myrcha, (4,5)

[BSc62] Skowronek Piotr, Building of dynamic interface on basis of application used to store information about IT hardware and software (in Polish – Budowa dynamicznego interfejsu na przykładzie aplikacji do ewidencji sprzętu IT i oprogramowania), supervisor: Julian Myrcha, (4)

[BSc63] Smulko Grzegorz, Optimization of fault injection tool for Win32 environment (in Polish – Optymalizacja techniki programowej symulacji błędów), supervisor: Piotr Gawrysiak, (excellent)

[BSc64] Śliwa Karol, Increasing the resolution of digital images, supervisor: Przemysław Rokita, (excellent)*

[BSc66] Szczepankiewicz Adam, *SD card software module for real time system* (in Polish – Modul programowy obsługi kart SD dla systemu czasu rzeczywistego), supervisor: Henryk Kowalski, (5)


[BSc68] Szczykulski Marian, *C# code generation from UML 2.1 class diagrams and state machine diagrams using FXU* (in Polish – Automatyczna generacja kodu z użyciem FXU – transformacja diagramów klas i diagramów stanów UML 2.1 w kod C#), supervisor: Anna Derezińska, (4,5)

[BSc69] Szlęk Dariusz Zbigniew, *Routing protocols simulation tool*, supervisor: Paweł Radziszewski, (5)*

[BSc70] Tarka Marcin, *Applications of aspect oriented programming*, supervisor: Ilona Bluemke, (3,5)*


[BSc75] Wujek Adam, *Operating system VxWorks as an example of RTOS – didactic usage for teaching embedded systems* (in Polish – System operacyjny VxWorks jako przykład RTOS – wykorzystanie dydaktyczne dla nauczania systemów wbudowanych), supervisor: Henryk Dobrowolski, (5)


[BSc77] Wroński Bartłomiej, *Digital musical instrument* (in Polish – Cyfrowy instrument muzyczny), supervisor: Henryk Kowalski, (5)

[BSc78] Zieleński Wojciech, *Simulator of queuing disciplines in Linux* (in Polish – Symulator kolejkowania w systemie Linux), supervisor: Paweł Radziszewski, (5)


[MSc2] Barczuk Piotr, *Context aware mobile massive multiplayer online games* (in Polish – Mobilne gry sieciowe ze świadomością kontekstu), supervisor: Piotr Gawrysiak, (4)


[MSc5] **Belkiewicz Michał**, *Scalability and performance analysis of MIMD parallel systems* (in Polish – Studium wydajności i skalowalności systemów równoległych klasy MIMD), supervisor: Dariusz Turlej, (excellent)


[MSc7] **Bluj Michał**, *Construction of protein interaction network* (in Polish – Konstrukcja sieci oddziaływań białkowych), supervisor: Krzysztof Walczak, (4,5)

[MSc8] **Buczyłko Cezary**, *Face recognition systems* (in Polish – System rozpoznawania twarzy), supervisor: Julian Myrcha, (5)


[MSc12] **Dębiec Michał Piotr**, *Automatic translation of BPMN business process models to WWF* (in Polish – Automatyczna translacja procesów biznesowych w notacji BPMN do modeli wykonalnych WWF), supervisor: Andrzej Zalewski, (4,5)


[MSc14] **Fronczak Paweł**, *Graphical images alignment and stitching* (in Polish – Łączenie obrazów barwnych z dopasowaniem), supervisor: Jerzy Chrząszcz, (excellent)


[MSc17] **Gańczyk Maciej**, *Quadtree in image mining* (in Polish – Wykorzystanie drzew czwórkowych w eksploracji obrazów), supervisor: Krzysztof Walczak, (5)
Gawroński Maciej, *Hybrid location acquisition system based on GSM and GPS* (in Polish – Hybrydowy system lokalizacyjny wykorzystujący sieć GSM i nawigację GPS), supervisor: Piotr Gawrysiak, (4,5)

Goch Mariusz, *Advanced hosting system* (in Polish – Zaawansowany system hostinguowy), supervisor: Piotr Gawkowski, (4,5)


Gongolewski Krzysztof, *Space divisions in grid algorithms* (in Polish – Podziały przestrzeni w algorytmach grupowania), supervisor: Grzegorz Protaziuk, (5)


Grochowina Ludwik, *Search engine optimisation*, supervisor: Dariusz Turlej, (4,5)*


Grzybowski Marcin, *Communication protocol in embodied agents systems* (in Polish – Protokół komunikacji w systemie agentów upostacowionych), supervisor: Henryk Dobrowolski, (4)


Jachmann Marcin, *Approximation of IFS attractors in real-time on programmable GPU* (in Polish – Aproksymacja atraktorów IFS w czasie rzeczywistym przy użyciu programowalnych kart graficznych), supervisor: Tomasz Martyn, (5)


Jarmulski Wojciech, *Description and comparison of resource management methods in service oriented architecture* (in Polish – Porównanie i opis metod zarządzania zasobami w architekturze zorientowanej na usługi), supervisor: Ilona Bluemke, (4,5)

Karwowski Kamil, *Ontology-based user-oriented requirements modelling* (in Polish – Ontologiczne modelowanie wymagań zorientowane na użytkownika), supervisor: Jacek Wytrębowicz, (4,5)

Kępiński Maciej Piotr, *Verify object implementations of communication protocols defined by MSC diagrams* (in Polish – Weryfikacja obiektowych implementacji protokołów komunikacyjnych zdefiniowanych diagramami MSC), supervisor: Michał Nowacki, (4,5)

Kęsik Paweł Tadeusz, *Motion estimation and segmentation in video sequences* (in Polish – Estymacja i segmentacja ruchu w sekwencjach wideo), supervisor: Krzysztof Gracki, (excellent)
MSc34  Kiermasz Wojciech, Information systems integration in Service Oriented Architecture (in Polish – Integracja systemów informatycznych w architekturze orientowanej na usługi), supervisor: Ilona Bluemke, (5)

MSc35  Kijewski Bartłomiej, SVM (Support Vector Machine) data exploration (in Polish – Eksploracja danych metodą wektorów nośnych), supervisor: Dariusz Turlej, (5)

MSc36  Kleszczewski Przemysław, Distributed search engine based on peer-to-peer network (in Polish – Rozproszony silnik indeksująco-wyszukujący oparty na sieciach typu peer-to-peer), supervisor: Piotr Gawrysiak, (5)

MSc37  Klicki Wojciech, Starzyk Konrad, Mobile devices to enterprise-class systems integration (in Polish – Integracja technologii mobilnych i systemów klasy Enterprise), supervisor: Piotr Salata, (5)

MSc38  Koleczynski Wojciech, Building the ETL process, based on mapping templates (in Polish – Budowanie procesu ETL w oparciu o szablony mapowania), supervisor: Piotr Salata, (5)

MSc39  Kossak Szymon, Multimedia presentation control with a web camera and a laser pointer (in Polish – Obsługa prezentacji multimediowych z wykorzystaniem kamery cyfrowej i wskaźnika laserowego), supervisor: Przemysław Rokita, (5)

MSc40  Kostrzewa Mariusz, Algorithms of building ontologies from textual data in polish language (in Polish – Algorytmy automatycznej budowy ontologii dla danych w języku polskim), supervisor: Henryk Rybiński, (5)

MSc41  Kościesza Karol Krzysztof, Graphical editor for designing algorithms of image processing (in Polish – Edytor graficzny do projektowania algorytmów z zakresu przetwarzania obrazów), supervisor: Krzysztof Gracki, (5)

MSc42  Kośmicki Piotr Stefan, Argumentation strategies in multi-agent systems (in Polish – Strategie argumentacji w systemach wieloagentowych), supervisor: Mieczysław Muraszkiewicz, (excellent)

MSc43  Krochmalska Ewa, Credit scoring handling for individual bank clients, supervisor: Andrzej Ciemski, (4)*

MSc44  Kubik Kajetan, Use of clustering in sequential patterns’ analysis (in Polish – Zastosowanie grupowania w analizie wzorców), supervisor: Grzegorz Protaziuk, (5)

MSc45  Kurowski Michał, Modelling of 3D terrain with caves inspired by erosion using programmable graphics processors (in Polish – Modelowanie terenu 3D z jaskiniami inspirowane erozją przy użyciu programowalnych procesorów graficznych), supervisor: Tomasz Martyn, (excellent)

MSc46  Kwiatkowski Andrzej, Automatic verification of user permissions in UNIX (in Polish – Automatyczna weryfikacja uprawnień użytkowników w systemach UNIX), supervisor: Jerzy Chrząszcz, (4,5)

MSc47  Lipska Justyna, Platform supporting the process of quality management in an IT company (in Polish – Platforma wspomagająca proces zarządzania jakością w firmie informatycznej), supervisor: Jarosław Chudziak, (5)

MSc48  Łapiński Łukasz, Language oriented programming (in Polish – Programowanie za pomocą języków specjalizowanych), supervisor: Andrzej Pająk, (5)
Machnicki Jakub, Performance monitoring of UNIX-based servers (in Polish – Problemy monitorowania wydajności systemów Unixowych), supervisor: Janusz Sosnowski, (excellent)

Makulec Aleksander, Data quality assessment and improvement (in Polish – Ocena i poprawa jakości danych), supervisor: Michał Rudowski, (4,5)

Markowski Mariusz, Testbed for Java applications (in Polish – Środowisko testowania aplikacji Java), supervisor: Piotr Gawkowski, (4,5)

Michalski Andrzej, Automatic text documents summarization (in Polish – Automatyczne generowanie streszczeń dokumentów tekstowych), supervisor: Grzegorz Protaziuk, (4,5)


Mosdorf Michał, Analysis of possibilities of usage of ECC cryptography for biomedical data transmission in embedded systems (in Polish – Analiza możliwości wykorzystania kryptografii opartej na krzywych eliptycznych do transmisji danych biomedycznych w systemach wbudowanych), supervisor: Wojciech Zabłotny, (5)

Motyl Paulina, Water simulation in natural reservoirs using GPU (in Polish – Symulacja wody w zbiornikach naturalnych przy użyciu programowalnych procesów graficznych), supervisor: Tomasz Martyn, (4)

Naszko Aleksander, Distributed repository for the Semantic Web (in Polish – Rozproszone repozytorium sieci semantycznej), supervisor: Henryk Rybiński, (4)

Nurkiewicz Tomasz, High level vector graphics language processor (in Polish – Procesor wysoko poziomowego języka grafiki wektorowej), supervisor: Ilona Bluemke, (excellent)

Oldziejewski Marcin, Removal of artefacts from JPEG compressed images (in Polish – Usuwanie artefaktów kompresji JPEG), supervisor: Jerzy R. Chrząszcz, (excellent)

Olsowiecki Bartosz, Archiving system of e-mail messages (in Polish – System archiwizacji wiadomości e-mail), supervisor: Grzegorz Blinowski, (4)


Pietrasik Rafał, Open environment for generating 3D terrain with height map method for gameing purpose (in Polish – Otwarte środowisko do generowania terenu trójwymiarowego metodą map wysokości na potrzeby gier komputerowych), supervisor: Tomasz Martyn, (4)

Przybyła Piotr, Cooperation of embodied agents in environment exploration – simulation experiments (in Polish – Kooperacja agentów upostaciowionych
Putra Jarosław, Computer acquisition and analysis of ECG signal using .NET platform (in Polish – Komputerowa akwizycja i analiza sygnału EKG z zastosowaniem platformy .NET), supervisor: Henryk Kowalski, (4)

Pytel Dawid Rafał, Aspect-oriented programming and annotations as a support of design patterns implementation (in Polish – Programowanie aspektowe i anotacje jako wsparcie w implementacji wzorców projektowych), supervisor: Andrzej Pająk, (5)

Rembiszewski Artur, Data flow testing of object oriented software (in Polish – Testowanie oprogramowania obiektowego metodą badania pokrycia przepływu danych), supervisor: Ilona Bluemke, (4,5)

Rutkowski Tomasz, Software implemented fault detection and tolerance in Win32 systems (in Polish – Programowa detekcja i tolerowanie błędów w systemach Win32), supervisor: Piotr Gawkowski, (excellent)


Seweryn Anna, Discover frequent behavioural templates of Internet users (in Polish – Wykrywanie częstych ścieżek navigacji w serwisach Internetowych), supervisor: Grzegorz Protaziuk, (4,5)

Skowyra Sławomir, Implementation of chosen data mining algorithms in Oracle 10g and SQL Server 2005 (in Polish – Implementacja i porównanie wybranych algorytmów eksploracji danych w Oracle 10g I SQL Server 2005), supervisor: Michał Rudowski, (4,5)

Socha Maciej Krzysztof, Methodology of software development dedicated for aided work school (in Polish – Metodika projektowania systemów informatycznych dedykowanych do wspomagania pracy szkoły), supervisor: Grzegorz Protaziuk, (4)

Sroczynski Tomasz, Classification of heart beats using support vector machine (in Polish – Klasyfikacja sygnałów EKG z użyciem maszyn wektorów nośnych), supervisor: Zbigniew Szymański, (4,5)

Stawicki Michał, Dynamic signature verification (in Polish – Weryfikacja podpisu dynamicznego), supervisor: Jerzy Chrząszcz, (5)

Strugala Karol, Distributed analysis of call graph in a telecommunication data (in Polish – Analiza grafu powiązań w danych telekomunikacyjnych za pomocą systemu rozproszonego), supervisor: Adam Kozakiewicz, (5)

w zastosowaniu do analizy polimorfizmów pojedynczych nukleotydów), supervisor: Robert Marek Nowak, (5)

[MSc77] Tupaj Łukasz, Advanced profile examination of an application (in Polish – Zaawansowane badania profili programowych dla architektury x86), supervisor: Janusz Sosnowski, (5)

[MSc78] Urbanowski Paweł Tomasz, Methods of configuration of FPGAs (in Polish – Metody konfigurowania układów FPGA), supervisor: Henryk A. Kowalski, (5)

[MSc79] Wójcik Aleksandra, Talking face animation (in Polish – Animacja mówiącej twarzy), supervisor: Jan Zabrodzki, (excellent)

[MSc80] Zacharczuk Grzegorz, Simulation of EFIS system for home flight simulator (in Polish – Symulacja systemu EFIS dla potrzeb domowego symulatora lotu), supervisor: Jan Zabrodzki, (excellent)


[MSc82] Zieliński Paweł, The development of algorithms for parallel knowledge discovery using graphics accelerators (in Polish – Rozwój algorytmów równoległego odkrywania wiedzy za pomocą akceleratorów graficznych), supervisor: Jan Mulawska, (5)

[MSc83] Żachowska Monika Anna, DINJ_System – Automation of simulation results analysis in data warehouse (in Polish – DINJ_System – Automatyzacja analiz wyników eksperymentów symulacyjnych w hurtowni danych), supervisor: Piotr Gawkowski, (excellent)
6. PUBLICATIONS

6.1. Scientific and technical books, chapters in books, translations, editorships


6.2. Scientific and technical papers in Journals

6.2.1 Scientific and technical papers published in journals listed in the Journal Citation Reports – JCR. List A – Ministry of Science and Higher Education


### 6.2.2 Scientific and technical papers published in journals listed in the Journal Citation Reports. List B – Ministry of Science and Higher Education


6.2.3 Other Journal


6.3. Scientific and technical papers in conference proceedings


7. RESEARCH REPORTS


8. AWARDS

The team: Prof. Janusz Sosnowski, Piotr Gawkowski, Ph.D., received the Rector’s collective award for the excellence in science.

Piotr Andruszkiewicz – the Best Paper prize sponsored by the Wiley-Blackwell Publishers for the paper “Privacy Preserving Classification for Ordered Attributes”, presented at International Conference, ICMMI, September, 2009, Kocierz, Poland.

Agnieszka Komorowska – 2nd award in Competition for the best paper written by young participant of KSTiT’2009 for the paper: Mobile agents’ authentication and authorisation based on PKI and attributes certificates’.
9. CONFERENCES, SEMINARS AND MEETINGS

9.1. Participation in international conferences


[Con8] Symposia and Workshops on Ubiquitous, Autonomic and Trusted Computing in conjunction with the UIC’09 and ATC’09 conferences, Brisbane, Australia, 7 – 9 July 2009, participant: J. Sosnowski.


[Con17] International Conference & Exhibition M4Life, Barcelona, 2 – 4 September 2009, participant: M. Muraszkiewicz.
9.2. Local conferences


10. LIBRARY OF THE INSTITUTE

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room: #135
e-mail: K.Sosnowska@ii.pw.edu.pl
phone: (+48 22) 234 7304

The Institute Library comprises the collection of more than 7000 books and 620 volumes of scientific journals and magazines. They are available to the Institute’s staff as well as to the Computer Science students. Over twenty Polish and foreign scientific and technical magazines are permanently subscribed. Additionally, the Institute’s Library has in stock more than 4500 special library items, including hardware/software product catalogues, software documentation, etc., as well as the wide range of research reports, diploma theses etc., issued by the Institute itself and by other Polish and foreign research institutions. The collection of books and handbooks is systematically updated and it is very representative for the computer science and computer engineering domains.

The Library’s information system provides the access not only to the own database of books, magazines and publications, but also to the similar specialised libraries of five other Institutes constituting the Faculty of Electronics and Information Technology, to the Library of the Faculty (all located in the same building), as well as to the Main Library of the Warsaw University of Technology and, generally, to the national library information system. The library users have an access to Internet (2 workstations) and are supported with two information systems: APIS (it covers libraries within the Faculty) and ALEPH – the library of the Institute is integrated with the library information system of the University.

K. Sosnowska has provided a specialised course “Library and Information Science Training” for the students of the Faculty.