With 1,800 students, the Faculty of Computer Science of the Technische Universität Dresden ranks among the largest education institutions for Computer Science in Germany. Eleven different degrees, such as Dr.-Ing., Dr. rer. nat., Diplom, Master, Bachelor, as well as several degrees for teaching are offered. Besides classical Computer Science and Media Computer Science, students may choose from five more study programs, including two Master’s programs taught completely in English.

The history of Computer Science education at Dresden’s IT location goes back to the beginnings of electronic computer engineering. Under Prof. Dr.-Ing. habil. N. J. Lehmann’s lead, scientists from Dresden were among the first to conceive and build magnetic drum memory and to develop the first digital electronic computers. These days the keystone project “Theseus” for creating a platform for Internet services, along with the IT-Lab “Res Ubique” where 19 scientist are developing cyber physical systems during the next three years and the development of an energy-self-sustaining single-family-house are just three out of more than 200 research projects.

Founded in 1828, the Technische Universität Dresden is one of the oldest and most venerable universities in Germany, and has strong research and numerous national and international co-operations. It is a member of the TU9 – an association of the nine leading technical universities in Germany. 57 percent of all doctorates and 47 percent of all alumni in engineering graduate from these universities.

As the only university in the east – next to the Berlin Humboldt Universität – the TU Dresden is in a position to pursue the outstanding title of an elite university. The six Institutes of the Faculty of Computer Science cover the whole spectrum of computer science from theory to practice and basic research to application. Particularly high scientific competency and efficiency distinguish the faculty in the areas of software engineering, multimedia, operating systems, privacy and data security, parallel and distributed computing systems, intelligent systems, and formal methods. Modern technology, teaching and learning driven by research and practice, internationally active professors and interesting main fields of research, as well as worldwide collaborations with universities and industry create ideal studying conditions.
NUMBERS AND FACTS

Numbers:
6 institutes
23 professors
3 junior professors
280 employees
1,800 students
more than 200 current research projects
more than EUR 6.6 million third-party research funds in 2010
26 dissertation, 1 habilitation in 2010
140 doctoral students

Study programs:
Computer Science
Media Computer Science
IT Systems Engineering
Teacher education
Computational Logic (engl.)
Distributed Systems Engineering (engl.)
European Master’s Program in Computational Logic

Visiting address:
Nöthnitzer Str. 46
01187 Dresden

Postal address:
Technische Universität Dresden
Fakultät Informatik
01062 Dresden

Degrees:
Diplom
Bachelor of Science / of Education
Master of Science / of Education
Dr.-Ing. / Dr. rer. nat.

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as of: July 2011
The Faculty of Computer Science hosts over 240 state-of-the-art computer workstations in ten PC pools, which offer a wide range of software with the operating systems Windows, Linux, and Solaris. In addition to the extensive multimedia, hardware, and software inventory, there are special workplaces for video editing, audio editing, and virtual reality. The rooms are supervised by a team that assists in solving problems and answering questions immediately. Additional WLAN workplaces and a campus-wide supply of WLAN enable optimal working conditions in the whole building and its adjoining green spaces.

The Center for Information Services and High Performance Computing (ZIH) of the Technische Universität Dresden, the Center of Excellence for parallel computing and software tools, is the central scientific unit responsible for the entire communication infrastructure of the university. It undertakes tasks within data communication and information processing for research, teaching, and studies. Since the implementation of a high-performance computer with the SGI system Altix 4700 and the PC farm with AMD Opteron Dual Core CPUs, ZIH has also been supporting scientists from all over Saxony in their research.

ZIH offers several useful services and resources for students. For example, every student at the Technische Universität Dresden gets a user ID upon enrollment, which the student can use to publish personal websites through the ZIH home file system. Via so-called VPN (Virtual Private Network), ZIH provides its users with protected access to the network area of the Technische Universität Dresden. This VPN access enables the use of resources and intranet services of the Technische Universität Dresden and the Sächsische Landesbibliothek – Staats- und Universitätsbibliothek Dresden (SLUB), from any terminal outside of the Technische Universität Dresden network. For the protection of their personal computers, every member of the Technische Universität Dresden is provided with anti-virus software, which includes a free update service.

Using hardware from Sun Microsystems and the VMware Infrastructure 3 software, a virtual computer center was built at the faculty in 2008. The ESX-Cluster consists of three Opteron Sun Fire X4200 M2 servers, each with four 2.4 GHz CPUs and a main memory capacity of 16 GB, plus seven servers, each with four 3.2 GHz CPUs and a main memory capacity of 32 GB.

Next to the computer workstations in the computer center, the faculty has different laboratories, which are used for teaching hardware topics, group work, and research projects. Through the early integration of students into the different fields of research, the faculty educates specialists that are sought-after worldwide.
“Computer science on the road – our interfaces keep you connected.“

Jun.- Prof. Dr. Thomas Schlegel
TRAVEL COMPANION FOR PUBLIC TRANSPORT

Which bus should I take? Where does the next train to Dresden leave from? Information about traffic offers, schedules, changes, or disturbances are important services for passengers in the public transport system. Therefore, transportation companies and linked transportation systems seek improvement and individualization of such data. Today, mobile devices such as mobile phones and smartphones with mobile internet and comfortable apps already facilitate individual travel assistance. Some companies currently offer systems that obtain and present information in different ways and varying levels of quality. For this reason, the passenger has to switch applications during his journey – if there is an app for the transport company supporting his device.

The research project IP-KOV-ÖV aims at developing models, methods and standards for modeling communication and interaction concepts. These are meant to enable traffic companies and systems to supply information in a standardized and structured way. Also, they form the basis for creating innovative services and apps that allow for providing an intuitive presentation and using reliable, individual, and up-to-date data. This way, the systems can automatically inform the traveler in a user-centered way and offer recommendations to him. Using his application the passenger should be able to find the optimal way independent of the actual town or transport system. The working group Mobile Customer Devices, which is managed by us, also aims at supporting less tech-savvy travellers and users with impairments in order to include as many people as possible.

Period
September 2010 – February 2014

Project administration
Jun.-Prof. Dr. Thomas Schlegel

Financing institution
Federal Minister of Economics and Technology

External cooperation partners
10 partners of industry and science, four transport companies

Research topics
mobile and ubiquitous systems, service-oriented architectures, communication systems

http://www.ip-kom.net
“High-Performance Computing has been identified as an accelerator for innovation and a key factor in maintaining competitiveness.”

Prof. Dr. rer. nat. Wolfgang E. Nagel
OPTIMISE HPC APPLICATIONS ON HETEROGENEOUS ARCHITECTURES

Taking advantage of heterogeneous architectures will be an absolute requirement for meeting the exponentially increasing R&D demands in many computing fields. As the demand from high-performance computing applications in various domains requires more and more compute power, hardware accelerators, such as General Purpose Graphics Processing Units (GPGPUs) that feature hundreds of processor cores to support parallel processing, are attractive options for accelerating floating-point-intensive numerical algorithms. Such heterogeneous computing architectures will not only require special operating systems, but also appropriate programming models, as well as methods and tools to take full advantage of such platforms.

The objective of the H4H (Hybrid4HPC) project is to provide developers of compute-intensive applications with a highly efficient hybrid programming environment for heterogeneous computing clusters composed of a mix of classical processors and hardware accelerators. To meet this challenge, the project partners need to leverage and consistently advance the state-of-the-art in several key software areas: programming models and associated runtimes, smart source-to-source translations, performance measurement and correctness tools, and dynamic automatic performance tuning.

The major expected outcome consists in a comprehensive, innovative, integrated, and validated set of programming models, methods, and tools to harness heterogeneous architectures, thereby helping compute-intensive applications developers to provide the advanced modelling and simulation capabilities the European Research, as well as the European Industry, are waiting for.

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<th>Period</th>
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<td>Project administration</td>
<td>Prof. Dr. Wolfgang E. Nagel</td>
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<td>Dr. Hartmut Mix</td>
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<td>Research topics</td>
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http://www.h4h-itea2.org
“End users composing even complex mobile applications from services, is no longer science fiction.”

Prof. Dr.-Ing. Klaus Meißner
With the internet going mobile and the combination of composite, service-oriented and adaptive web technologies, a broad range of novel application scenarios evolves. Future applications will be composed by dynamically combining services with associated user interface components. They will adapt to user and device specific contexts and distribute functionality and interaction elements across multiple devices. End users partake in the development process by specifying, assembling, and adapting mash-up applications, which suit their specific needs and changing usage situations.

The EDYRA project is aimed at providing a simplified development approach for composite ubiquitous web applications. New methods and tools will enable end users and domain experts to participate in the engineering process directly. Whilst today’s mash-up technologies support the composition of applications with moderate functional complexity, EDYRA strives to implement more complex and elaborate business processes, keeping the development process simple enough for end users to contribute.

Research activities focus on providing a process model for the end user development of composite mobile rich internet applications, complemented by appropriate design and modeling methods, as well as, easy to use integrated development tools. Special emphasis is on mash-ups that are dynamically composed of web and user interface services. Further activities involve acquisition, modeling, and processing of context information for distributed service-oriented environments, and methods for quality assurance and software tests.
„Sustainability and Energy Efficiency - Thanks to Better Visibility in Production.“

Prof. Dr.-Ing. habil. Martin Wölschlaeger
Modern manufacturing facilities house a variety of information technology and data processing systems. Pressure from the cost side of production puts a high demand on integration and interoperability of these systems. For production planning, correct and timely access to data from all parts of a production plant are necessary. Production systems, however, are far more heterogeneous when compared to office systems. Several standards exist, most of them were never intended to be run in cooperation.

The goal for many companies is to form a common basis for “collecting” information and indicators from all parts of a production plant. At the same time this information needs to be presented in an easily understandable manner to the users. To address these goals, “PLANTCockpit” was launched as part of the seventh Framework Programme for research funding by the European Commission. Besides the chairs for Technical Information Systems and Industrial Communications of the Faculty of Computer Science of TU Dresden, the project brings together academic partners from Spain, Italy, Switzerland and Finland as well as industry partners from Germany, Ireland, the Netherlands, the Czech Republic, Italy and Spain.

The overall aim of the project is to develop research prototypes and demonstrators for software architectures envisioning the vision of a fully integrated, highly accurate and timely production cockpit. In order to achieve this goal, modern developments from all disciplines of computer science are considered. Especially semantic web technologies are evaluated regarding their applicability in the context of modern industrial communication systems. A synchronization with other research projects from the EU funding programme is aspired. The aim is to influence the research topics of the european nations for the coming years to support international competitiveness.

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<td>Research topics</td>
<td>Production system visualization, information modeling, service oriented architecture, internet technologies in automation, software interface design</td>
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http://www.plantcockpit.eu
“O happy the man who still can hope
Though drowned in a sea of error!
Man needs the things he doesn’t know,
What he knows is useless, forever."

Faust I, Johann Wolfgang von Goethe
Until recently, programmable single processors have been the state-of-art in embedded systems. Current systems integrate multiple programmable components (e.g. multi-core systems) on a single chip. Managing this increasing complexity has become a significant part of the development process.

The focus of this project is on the smart capture (hardware trace) of runtime information. Since this task is limited by the resources of the target system environment, the extraction of static and dynamic characteristics from trace data is investigated as the basis of an iterative and incremental development process.

The research of new methods and procedures for the investigation of qualitative and quantitative efficiency parameters based on profiles of runtime, memory access and parallelism, guides the development of new tools for hardware and software engineers. They will assist in quantification and efficient use of hardware resources, regarding energy efficiency and software performance. An innovation, in contrast to current concepts, is the extension of existing techniques with static and dynamic code analysis, especially by means for the specification and parameterization of trace tasks, and the reconstruction and analysis of trace data. The project is supported by the European Union and the Free State of Saxony.

Period
October 2010 – September 2012

Project administration
Prof. Dr. Rainer G. Spallek

Financing institution
European Regional Development Fund

External cooperation partner
PLS Programmierbare Logik & Systeme GmbH

Research topics
power efficiency, efficiency analysis for embedded systems, hardware trace analysis, quantitative analysis

http://esoc.inf.tu-dresden.de
“Microkernels are the obvious technology of choice for fault-tolerant systems.”

Prof. Dr. rer. nat. Hermann Härtig
Embedded computers play a key role in many of today’s technical applications and we rely on them to perform the right job even in the presence of faults. In highly safety-critical systems, such as automobiles, this is usually achieved by implementing the critical features in a dedicated component that is largely disconnected from the rest of the system.

Current trends in processor design indicate, that future safety-critical embedded systems will not consist of dedicated chips. Instead, we will see a large number of applications being run on a multi-core system. It is then up to the operating system (OS) to manage the varying resource needs. A current OS contains several core functions that depend on error free hardware (HW). Errors in these functions quickly and irreversibly propagate through the system making it virtually impossible to recover from a function failure. Other OS functions can recover from failures with appropriate mechanisms. Such functions inherit the dependability requirements of the applications using it.

The project idea is to develop an OS and HW mechanisms that utilize the HW and communication resources of a many-core system to efficiently provide the required dependability. The goals are to (1) identify the critical core functionality, (2) to minimize the hardware and software resources needed for the core, (3) to establish interfaces and signalling between HW, OS, and applications so as to provide system integrity which shall be guaranteed by a corresponding formal safety analysis, and (4) to extend the underlying HW architecture to provide the necessary fault handling mechanisms.

The work is based on the L4 microkernel and uses the IEC61508 to determine applications’ functional safety requirements.
“The increasing requirement for qualified employees demands competent study abilities of the students.”

Prof. Dr. paed. habil. Steffen Friedrich
The transition from high school to university, according to the level of demands as well as the self-organisation of learning, is a huge challenge for students who have just started university. The contrast between the expectation of a university to their freshman students on the one hand and the special situation for them on the other hand is marked by the actual faculties and competences of the students who have just taken their A-levels.

Project „UnIbELT“ is promoted by the European Social Fund and aims to support general-educational high schools in Saxony with a media-based opportunity for their study start-up and study-orientation by using internet-based e-learning-tools connected with the learning-management-system OPAL for selected learning-contents.

Within the project-term of three years, students which are preparing for their A-levels, will get the opportunity to familiarise with web-based learning within their education in high school and to get to know the learning-platform OPAL as a preparation for their later studies as well as attending an e-learning course on their own. The process is supervised by a high school teacher and a tutor of the TU Dresden and ends with a consultation in which the students are getting the opportunity to reflect on their increase in knowledge and their competences in self-organised learning.

During the project-term 900 Saxon high school students will participate and complete e-learning courses in project „UnIbELT“. It covers the fields of sciences, mathematics, linguistics, art and also methods of scientific research.

Period
September 2009 – December 2012

Project administration
Prof. Dr. Steffen Friedrich
Prof. Dr. Thomas Köhler

Financing institution
European Social Fund (ESF)

External cooperation partners
Media Center TUD

Research topics
high school to college transition, academic study preparation, e-learning in school

http://unibelt.inf.tu-dresden.de
“The Smart Home offers intelligent solutions for demographic change.“

Prof. Dr.-Ing. habil. Klaus Kabitzsch
Old and impaired persons, who still want to live in their own homes without any inpatient care, can be supported by assistance systems. This concept is known as Ambient Assisted Living (AAL). Common AAL solutions are poorly used in private homes, because they are too expensive. Also, it is usually not possible to retrofit these products: Caused by increasing age, more assistance functions could become necessary. Thus a completely new system has to be brought and the already installed components cannot be used anymore.

The most urgent needs in private homes are emergency systems, especially in single households. But in case of emergency the person concerned is too often not able to trigger them anymore. Therefore the aim is to automatically detect such situations like falls, fainting, but also critical situations caused by dementia (a forgotten switched on cooker or spigot). In such cases emergency calls will be generated automatically.

The joint project AUTAGEF – Automated Assistance in Critical Situations – will develop such a system exceedingly low priced, easy to install and to retrofit. The basic concept is to use the commonly installed smart meter for electricity, water, etc. as “sensors,” who can detect irregularities within the resident’s everyday behavior to deduce alarm messages.

The dual use of meters not only saves acquisition and installation costs, but even can, by a combination of the AAL service with an energy management service, faster amortize the costs. Thus it becomes affordable for all households. After the proving in a wide ranged field test in Dresden, the system will be offered to the market.

Period
May 2010 – April 2013

Project administration
Prof. Dr. Klaus Kabitzsch

Financing institution
Federal Ministry of Education and Research

External cooperation partners
six national industry partners

Research topics
Smart Home, assistant systems, pattern recognition

http://www.autagef.de
With a virtual cut MdG Jörg Geier from SMWK opens the research laboratory “ResUbic” at the event OUTPUT.DD 6.0. The Lab is promoted by the European Union with 4.5 million euros.
CONFERENCES & RESEARCH PRICES

Annually, the Faculty of Computer Science runs numerous international and national conferences and professional conferences on various IT topics and is actively represented worldwide by its contributions.

Technical lectures in Australia, USA, China, Indonesia, and Europe, as well as numerous publications and research visits from renowned scientists from all over the world, reflect the high recognition of the university’s research results. Extensive and numerous industrial co-operations all around the globe guarantee innovative ideas and a high level of education for students in the Computer Science Faculty.

IT Concerns honour outstanding accomplishments of students with numerous prizes. On the 13th May 2011 the SAP-Dissertationspreis went to Jendrik Johannes for his work „Component-Based Model-driven Software Develop“. AMD- and Lehmann-Prize honours the best IT diploma and went to Julian Eberius and Stefan Borgwardt. The “Best woman award” of Saxonia Systems AG went to Katja Tietze. The IBM Deutschland GmbH is awarded to the best intermediate diplomas and was awarded to André Weddig, Matthias Berthold, Andreas Höer and Markus Teichmann.

Press reports of the faculty

The Imagine-cup winners are helping to improve the drinking water supply in developing countries. The student team “majiRanger” of the faculty of computer science brings the cup back to Dresden for the third time in a row.

An interdisciplinary research team of the Technische Universität Dresden has developed a „Plusenergiehaus mit E-Mobilität“ (selfproducing energy house with e-mobility).

Cloud-Computing-Research in Saxony receives 1.6 million euro’s worth of EU promotion. Computer scientists of the TU Dresden, SAP AG and international partners are involved with new research projects such as „zSRT-15“.

GeneCloud, a project from Transinsight, TU Dresden, Antikörper Online, RESprotect and Qualitity was selected as one out of twelve winners of the Trusted Cloud research programs 2011. The aim of GeneCloud is the development of Cloud-Computing-Services for the Life Sciences.

To understand Computer Graphics for the blind – Researchers from the institute for practical Informatics of the TU Dresden developed a graphics display and its associated software for the blind.

The TU Dresden has established a new IT-research laboratory “Centrum Res Ubique Dresden” where 19 Scientist are developing cyber physical systems during the next three years. These won’t be used just for the future offices. They can also help to control houses and factories in a more efficient way and also to prevent traffic accidents or help vehicles to communicate on the autobahn.

On the 1st November the new project “Zessy” started on the Faculty of computer science. It is promoted with around 1.4 million euro’s from “Europäischen Sozialfonds (ESF)” and from the state of Saxony. The Object of this project is the research of a new methodology for the development of a more solid and integrated energy-saving system architecture.

Technische Universität Dresden has been honoured as NVIDIA CUDA Research Center. Five research groups from TU Dresden and Helmholtz-Zentrum Dresden-Rossendorf are testing graphic proceedings for faster application.
INTERNAL AND EXTERNAL RESEARCH CENTERS

International Center for Computational Logic

The International Center for Computational Logic (ICCL) is an interdisciplinary center of competence in research and teaching in the field of Computational Logic, with special emphasis on Algebra, Logic, and Formal Methods in Computer Science.

It is essentially borne by the Artificial Intelligence Institute and the Institute of Theoretical Computer Science at the Faculty of Computer Science as well as by the Institute of Algebra at the Faculty of Science.

ICCL coordinates the European Master’s Program in Computational Logic, one of the very few programs of study supported by Erasmus Mundus.

Biotechnology Center (BIOTEC)

The Biotechnology Center of the Technische Universität Dresden is a unique interdisciplinary center focusing on research and education in molecular bioengineering. The BIOTEC hosts top international research groups dedicated to genomics, proteomics, biophysics, cellular machines, molecular genetics, tissue engineering, and bioinformatics.

The BIOTEC has some 230 members from 35 countries from Eastern and Western Europe, Asia, Australia, and America that work in the fields of biology, medicine, physics, chemistry, computer science, and engineering.

The BIOTEC provides excellent lab facilities and an infrastructure which enables collaboration with other companies residing in the same building.

Future Manufacturing at SAP Research

The campus-based SAP Research Center in Dresden develops and implements Innovative software technologies for production control of the future. An example is the early detection and processing of maintenance requirements on production machines. For the integrated management of complex logistics processes in a manufacturing environment countless transportation steps are being recorded, technically integrated via software, distributed, and processed. The cooperation includes joint consortia projects, as well as a comprehensive PhD program.

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DIRECTIONS TO THE FACULTY OF COMPUTER SCIENCE

The building at Nöthnitzer Straße 46 can be reached directly by public transport. From the stops Münchner Platz of streetcar-line 3, Mommensenstraße of bus-line 66, and Helmholtzstraße of bus-line 85, the building can easily be reached within a few minutes.

From the stop Münchner Platz, walk up Georg-Schumann Straße to the end where it meets Nöthnitzer Straße (about 450 meters). There you can already see the faculty building on the opposite side, with the main entrance about 50 meters to the left.

From the stop Mommensenstraße, walk up Bergstraße a few meters, then turn right onto Mommensenstraße and follow it to the end where it meets Helmholtzstraße (about 450 meters). Turn left and walk up Helmholtzstraße to the end where it meets Nöthnitzerstraße (250m). From here, the main entrance of the faculty building is about 100 meters to the right on the opposite side.

The bus stop Helmholtzstraße is located directly in front of the building. It is most convenient for reaching the faculty building from within Dresden city via the interchanges “Tharandter Straße”, “Rathaus Plauen” or “Wasaplatz”.

If you arrive by airplane, you can take a local train (“S-Bahn” 2). The S-Bahn leaves every 30 minutes from the basement of the Dresden Airport to the Dresden main train station (“Hauptbahnhof”).

Arriving by train, get off at the Dresden main train station (“Hauptbahnhof”), take streetcar-line number 3 towards “Coschütz” and get off at stop “Münchnerplatz”.

By car on the Autobahn A4 from Chemnitz/Leipzig or Berlin, leave A4 at Dreieck Dresden-West and change to Autobahn A17 in the direction to Prague. Leave A17 at the exit Südvorstadt. Drive along the B170 towards “Zentrum”. Follow the signs in the direction of Plauen and turn left onto Nöthnitzer Straße. The faculty building is about 500 meters further on the left side.
LIST OF PROFESSORS (1/4)

Chair of Industrial Communications
Institute of Applied Computer Science

Prof. Dr.-Ing. habil. Martin Wollschlaeger
Director of Institute

- Industrial communication systems – Ethernet-based systems, fieldbus systems, management of heterogeneous networks
- Information models in automation, device and interaction models in Life Cycle, semantic annotations, continuous description methods
- Industrial Internet – integration of IT solutions and automation systems, web technologies in automation

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Chair of Human-Computer Interaction
Institute of Applied Computer Science

Prof. Dr. rer. nat. habil. Gerhard Weber

- User-centered design of adaptable, multi-modal and multimedia user interfaces
- Ambient Assisted Living – navigation and new mobile services for mobility impaired people
- Adaptation and adaptivity in time-dependent media for blind, visually impaired, deaf, and dyslexic people
- Digital libraries for readers with special needs

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Chair of Modeling and Simulation
Institute of Applied Computer Science

Prof. Dr. rer. nat. Oliver Rose

- Modeling, simulation, and analysis of the material flow in complex production facilities such as semiconductor manufacturing facilities or assembly lines for planes
- Methods for the performance evaluation of production facilities
- Robust methods for the operational control of production facilities
- Tool-independent modeling of production facilities (Modeling standards)

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Chair of Technical Information Management Systems
Institute of Applied Computer Science

Prof. Dr.-Ing. habil. Klaus Kabitzsch

- Distributed, linked automation systems, field-buses, applications in plants and buildings, ambient assisted living
- Wireless sensor networks
- Process identification, advanced control, predictive maintenance
- Design, test and diagnosis tools for automation systems, PLC, embedded systems
- LONWORKS reference asset

Chair of Bioinformatics
Institute of Artificial Intelligence

Prof. Dr.-Ing. Michael Schroeder

- Analysis of gene expression and protein interaction data
- Gene annotation with text-mining and ontologies
- Applications in neurodegeneration and pancreas cancer

Chair of Knowledge Representation and Reasoning
Institute of Artificial Intelligence

Prof. Dr. rer. nat. habil. Steffen Hölldobler
Dean of Studies for international study programs, Acting Director

- Logic and Logic Programming
- Knowledge Representation and Inference
- Connectionist Systems
LIST OF PROFESSORS (2/4)

Chair of Multimedia Technology
Institute of Software and Multimedia Technology

Prof. Dr.-Ing. Klaus Meißner
Director of Institute

- Development methods and system architecture for distributed, adaptive, multimedia applications in mobile and web scenarios
- Advanced rich media user interface techniques for web service oriented applications
- Collaboration and communication techniques in virtual teams, communities and organizations
- Personal information life cycle management: semantic modeling and management of multimedia information, documents and applications

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Chair of Computer Graphics and Visualization
Institute of Software and Multimedia Technology

Prof. Dr. rer. nat. Stefan Gumhold
Dean

- Development of interactive 3D applications for PC and VR systems
- Scanning and processing of static and dynamic geometry models
- Model reduction for the interactive simulation of natural phenomena
- Basic research and development of customized applications in the domain of scientific visualization

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Chair of Media Design
Institute of Software and Multimedia Technology

Prof. Dr.-Ing. habil. Rainer Groh

- Concept and design of interactive systems
- 3D-Projection principles according to human perception
- Design methods of Human-Computer Interaction

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Junior Professorship in Software Engineering of Ubiquitous Systems
Institute of Software and Multimedia Technology

Jun.-Prof. Dr. Thomas Schlegel

The professorship conducts research at the intersection of Ubiquitous Computing, Human-Computer Interaction and Software Engineering. This includes the application and further development of existing methods as well as the integration of innovative technologies and interaction techniques. The main emphases are, inter alia, mobile devices, multimodality, context, semantic models and application domains of „intelligent” environments.

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Chair of Software Technology
Institute of Software and Multimedia Technology

Prof. Dr. rer. nat. habil. Uwe Aßmann

Software technology deals with the systematic construction of large software systems.
- Component-based software engineering for software reuse
- Model-driven development and language engineering
- Construction of software product lines
- Application of logic and semantic in software engineering
- Energy-aware and real-time software

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Workgroup Didactics of Computer Science
Institute of Software and Multimedia Technology

Prof. Dr. paed. habil. Steffen Friedrich
Commissioner of Studies for teaching post courses

- Teaching methodology of ICT / ICT teaching
- Didactical aspects of e-learning
- Educational standards of ICT at schools

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LIST OF PROFESSORS (3/4)

Chair of Databases
Institute of Systems Architecture

Prof. Dr.-Ing. Wolfgang Lehner
Director of Institute

- Data Streams
- AOS: Sampling in databases
- Model-Driven Data Engineering
- Data-aware service orchestration
- Database technology for analysis of large datasets (Data Warehouse systems, OLAP and Data Mining support)
- Advanced Data Analysis for Photo Mask Production

Chair of Operating Systems
Institute of Systems Architecture

Prof. Dr. rer. nat. Hermann Härtig
Vice Dean

- Microkernel-based Operating Systems
- Real-Time Systems, Embedded Systems
- Secure-System Architectures
- Virtual-Machine Technology
- Interaction HW/SW Architectures

Chair of Computer Networks
Institute of Systems Architecture

Prof. Dr. rer. nat. habil. Dr. h. c. Alexander Schill

- Service-oriented Architectures for the Future Internet
- Mobile and Ubiquitous Computing
- Real-Time Collaboration
- Network Security and Network Design
- Internet Information Retrieval
Chair of Systems Engineering
Institute of Systems Architecture

Prof. Dr. Christof Fetzer

The more computers are being trusted, the more necessary it becomes to learn how to create computer-based systems which you can rely on. The focus of this group lies on the investigation into how you can build trustworthy systems which range from uncritical systems in private households to safety-critical systems.

Chair of Embedded Systems
Institute of Computer Engineering

Prof. Dr.-Ing. Christian Hochberger
Dean of Studies for German study programs,
Director of Institute

The research of this group is focused on increasing the abstraction level of the development process of Embedded Systems. To this end, we develop tools to simplify the usage of reconfigurable architectures, enable object oriented languages using the example of Java, and develop innovative debugging technologies.

Chair of Computer Architecture
Institute of Computer Engineering

Prof. Dr. rer. nat. Wolfgang E. Nagel

- Software tools for the support of programming and optimization
- Programming methods and technologies for high-performance computers
- Grid-computing
- Architecture and performance analysis of high-performance computers
- Algorithms and methods for the modeling of biological processes
LIST OF PROFESSORS (4/4)

Chair of VLSI Design, Diagnostics and Architecture  Institute of Computer Engineering

Prof. Dr.-Ing. habil. Rainer G. Spallek

- Circuit, Processor and System Design
- Modeling and Simulation of Electronic Systems
- Test and Diagnosis of Complex Systems
- Dependability and Heterogeneous System Architectures

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Chair of Automata Theory  Institute of Theoretical Computer Science

Prof. Dr.-Ing. Franz Baader
Director of Institute

- Knowledge Representation (in particular, Description and Modal Logics)
- Automated Deduction (in particular, Term Rewriting, Unification, and Constraint Solving)
- Automata Theory (in particular its applications in logics)

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Chair of Algebraic and Logical Foundations of Computer Science  Institute of Theoretical Computer Science

Prof. Dr. rer. nat. Christine Baier

- Modeling
- Specification and analysis of reactive systems
- Model checking
- Coordination languages
- Probabilistic systems
- Verification of quantitative properties

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LECTURERS

Chair of Foundations of Programming
Institute of Theoretical Computer Science

Prof. Dr.-Ing. habil. Heiko Vogler

- Automata theory
- Formal models for natural language processing
- Functional programming

Applied Knowledge Representation and Reasoning
Institute of Artificial Intelligence

Doz. Dr.-Ing. habil. Uwe Petersohn

- Intelligent Agents, Search Algorithms, Discrete Optimization, Planning
- Logic and Knowledge Representation, Hybrid Knowledge Models, Problem-solving, Uncertain Knowledge and Reasoning
- Case-Based Reasoning, Making Complex Decisions
- Methods of Machine Learning
CO-MEMBERSHIPS

Faculty of Mathematics and Natural Sciences
Chair of Theory of Algebraic Structures
Prof. Dr. Bernhard Ganter

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Faculty of Electrical and Computer Engineering
Chair of Mobile Communications Systems
Prof. Dr.-Ing. Gerhard Fettweis

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Faculty of Mechanical Engineering
Chair of Engineering Design and CAD
Prof. Dr.-Ing. habil. Ralph Stelzer

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Faculty of Electrical and Computer Engineering
Chair of Telecommunication Technology
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Faculty of Business Management and Economics
Chair of Business Informatics, esp. Information Systems in Trade and Industry
Prof. Dr. rer. pol. Susanne Strahringer

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