Conference Program

KI-2007

30th Annual German Conference on Artificial Intelligence

Osnabrück, Germany, September 10–13, 2007

www.ki2007.uos.de

UNIVERSITÄT OSNABRÜCK

Time	Su 9.9.2007	Mo 10.9.2007	Tu 11.9.2007	We 12.9.2007	Th 13.9.2007
8:30		+ Registration	+ Registration	+ Registration	+ Registration
9:00			Opening		
9:15			Invited Talk I **Albayrak**	Invited Talk III **Fox**	Invited Talk V **Bibel**
9:30		Tutorials/ Workshops Morning			
10:15					Coffee
10:30			Coffee	Coffee	DFG Session
11:00		Coffee	Technical Sessions I (Parallel Tracks)	Technical Sessions II (Parallel Tracks)	
11:30		Tutorials/ Workshops Morning			
12:00					Coffee
12:15					Invited Talk VI **Buss**
12:30			Lunch	Lunch	
13:00		Lunch			
13:30					Farewell
14:00			Tech. Session **Best Papers** (Single Track)	Poster Session	
14:30		Tutorials/ Workshops Afternoon			
15:30			Coffee	Coffee	
16:00		Coffee	Invited Talk II **Elovici** (until 17:15)	Invited Talk IV **Christaller** (until 17:15)	
16:30		Tutorials/ Workshops Afternoon			
18:00		Meeting **Fachbereich KI**			
19:00 +	Registration, Welcome	Welcome	Reception "Historic Town Hall"		
19:30				Dinner	

Contents

Welcome

Osnabrück's *Kreuzungsbahnhof*
(Google Map)

… so you have made it to Osnabrück! Those of you who have arrived by train may have recognized the most uncommon layout of its main station as an X junction station, a *Kreuzungsbahnhof*, or, even more specific, a *Turmbahnhof*, to use German railway engineers' terms. East-West and North-South tracks meet here in two levels – like in Berlin's recently opened Main Station, only that Osnabrück's one is a lot older (of 1895, to be precise) and probably less impressive.

A *Kreuzungsbahnhof* heralds a place where people could meet. You could change directions very easily: East-West is just one flight of stairs down of North-South in Osnabrück main station. You could also dash through without so much as looking up, unaware of the fact that you have just come across a different direction.

Sounds like Osnabrück main station would be the typical location for a scientific conference, incorporating the potential, for better or worse, of such an event. Yet, we decided to move KI-2007 a few hundred footsteps away from it into the main campus of the University of Osnabrück, which is proud of hosting a KI conference for the first time. It is a relatively young university – in fact, given that it has started operating in its current form in 1974, it is about as old as the KI conference, whose first exemplar took place early in 1975, and which is run for the 30th time this year. The University's teaching and research profile is shaped by a number of interdisciplinary institutes and study courses, of which Cognitive Science is prominent since quite some time. AI and robotics are also visibly present in its young Informatics institute, so Osnabrück appears to be among the obvious places in Germany for running a conference of the KI series.

Like its 29 forerunners, KI-2007, together with its workshops and tutorials, has aimed at covering the field of AI in its full breadth and width. Following the local spirit of Osnabrück's AI research and teaching, we have biased the program towards AI's role within Cognitive Science. Given that the 30th conference of a series is a small anniversary, we have also added a bit of conference – not only location and city – history.

We hope that you can use KI-2007 to meet people – old friends and colleagues as well as new ones. We hope you are not just dashing through without looking up, just making another bullet on the publication list. We hope you appreciate the choices that we have made in assembling the scientific program and all the rest. In a nutshell: We hope that you enjoy being part of KI-2007 at least as much as we have enjoyed organizing it.

Welcome to Osnabrück, and welcome to KI-2007!

Joachim Hertzberg, Michael Beetz, and *Roman Englert*

Monday, September 10, 14:30–18:00, Aula

Tutorial I: Visual Analytics: A New Cross-Disciplinary Field of Research

Visual analytics is an emerging field of cross-disciplinary research where AI scientists can make a valuable contribution. The goal of this tutorial is to make the AI community aware of the new field, its major research challenges, and the existing background and in this way stimulate AI scientists to participate in the visual analytics research in cooperation with other specialists, in particular, researchers dealing with visual representations and interaction technologies. The tutorial will present some state-of-the-art software tools devised to support data exploration and analysis. The tools combine interactive visualisation with data transformations and data mining methods. It is planned to conclude the tutorial with a discussion of possible interactions and synergies between visualisation and AI and potential contribution of AI into the development of visual analytics.

Gennady and Natalia Andrienko are research fellows at the Fraunhofer Institute Intelligent Analysis- and Information Systems (IAIS). They have published extensively on the subject, including their latest monograph "Exploratory Analysis of Spatial and Temporal Data" (published in December 2005 by Springer). They have been involved in numerous international research projects

Monday, September 10, 9:30–13:00, Aula

Tutorial II: Preference Modeling, Elicitation, Representation, and Reasoning

When we design an agent that automatically shops on the web or controls a rover on Mars, we don't want it to buy any item or conduct any experiment. We want it to buy the best available item and conduct the most useful experiment. In short, we want it to act optimally. But acting optimally on behalf of a user requires understanding of that user's goals and preferences. How can an agent obtain this information efficiently when acting on behalf of a lay user? How can this be done with a minimal effort on the part of the user? How does one represent preference information compactly and reasons with it effectively? These questions drive the research conducted in the area of preference modeling, elicitation, representation, and reasoning techniques. The tutorial will survey some of the major developments in this area, discussing the problems of decision-making under certainty and uncertainty, and explaining some practical applications of each of these settings and their characteristics. Much emphasis will be placed on graphical models of preference and models of qualitative preferences that are especially suitable for lay users, as well as on algorithmic techniques for preference elicitation and reasoning.

Carmel Domshlak is a Senior Lecturer at the Faculty of Industrial Engineering and Management in Technion, Haifa, Israel. His research interests are in modeling and reasoning about preferences, planning, and reasoning about action. He is a member of the JAIR editorial board.

Monday, September 10, 9:30–18:00, 15/111

Learning from Non-Vectorial Data (LNVD 2007)

9:30–10:30	**Invited Talk**
	Stefan Wrobel (University of Bonn, FhG IAIS)
	Recent Approaches to Pattern Discovery and Ranking with Graphs
10:30–11:00	*Christophe Costa Florencio* (KU Leuven)
	Unsupervised Learning of Graph Languages using Kernels: New Results
11:00–11:30	Coffee Break
11:30–12:00	*Brijnesh J. Jain, Klaus Obermayer* (TU Berlin)
	Theory of the Sample Mean of Structures
12:00–12:30	*Alexander Mehler, Ulli Waltinger, Armin Wegner* (University of Bielefeld)
	A Formal Text Representation Model Based on Lexical Chaining
12:30–12:45	*Ulf Brefeld* (MPI Saarbrücken)
	Cost-based Ranking in Input Output Spaces
12:45–13:00	*Uwe Mönnich* (University of Tübingen), *Jens Michaelis, Ekaterina Ovchinnikova, Tonio Wandmacher, Kai-Uwe Kühnberger* (University of Osnabrück)
	Information Extraction From Annotation Graphs Serving for the Adaptation of Ontologies
13:00–14:30	Lunch
14:30–15:30	**Invited Talk**
	Edwin Hancock (University of York)
	t.b.a
15:30–16:00	*Emanuel Kitzelmann* (University of Bamberg)
	Data-Driven Learning of Functions over Algebraic Datatypes from Input/Output-Examples
16:00–16:30	Coffee Break
16:30–17:00	*Helmar Gust, Ulf Krumnack, Kai-Uwe Kühnberger, Angela Schwering* (Uni Osnabrück)
	Integrating Analogical and Inductive Learning at different Levels of Generalization
17:00–17:30	Final Discussion

PuK 2007: 21. Workshop Planen, Scheduling und Konfigurieren/Entwerfen

9:30–11:00	Evolution of Configuration Models – a Focus on Co*nsistency* *Thorsten Krebs*
	Augmenting JSHOP2 Planning with OWL-DL *Ronny Hartanto, Joachim Hertzberg*
	Optimal Infinite-State Planning with Presburger Automata *Björn Borowsky, Stefan Edelkamp*
11:00–11:30	Coffee Break
11:30–13:00	Extending Plant Packing *Matthias Postina, Rene Schumann, Sonja Aust, Jan Behrens*
	Externalizing the Multiple Sequence Alignment Problem with Affine Gap Costs *Stefan Edelkamp, Peter Kissmann*
	A Region-based Direction Heuristic for Solving Underspecified Spatio-temporal Planning Problems *Inessa Seifert*
13:00–14:30	Lunch
14:30–16:00	Ein hybrides Framework für Constraint-Solver zur Unterstützung wissensbasier Konfigurierung *Wolfgang Runte*
	Modelling and Solving Workforce Scheduling Problems *Jürgen Sauer, Rene Schumann*

Monday, September 10, 9:30–18:00, 11/212

2nd Workshop "emotion and computing – current research and future impact"

Session 1: 9:30–11:00 *Speech – Touch – Vision*	• Welcome and Introduction • Emotion Recognition in Speech using a Modified Version of the Median-Cut Algorithm • Human Capabilities on Video-based Facial Expression • Recognition • Touch Perception and Emotional Appraisal for a Virtual Agent
11:00–11:30	Coffee Break
Session 2: 11:30–13:00 *Empathy – Androids – Games*	• Simulating Empathy for the Virtual Human Max • Constructing Androids as Emotional Agents in Robot-Human • Relationships • Moods and Shallow Emotions for Balanced Speech Acts in Computer Games • Interpretation of Intensity Variables for an Emotional Agent in the Public Goods Game
13:00-14:30	Lunch
Session 3: 14:30–16:00 *Models – Applications*	• Towards a Quantitative Model of Emotions for Intelligent Agents • Using the Emotional Relation of Topics for Text Mining Based Recommendation Systems • Application of emotion recognition methods in automotive research
16:00-16:30	Coffee Break
Session 4: 16:30–18:00 *Discussion on Models*	• True Feelings: Functionalist and Descriptionalist Modeling of Emotion • Moderated Discussion • Wrap up of Discussions and Workshop Summary

Monday, September 10, 11:30–17:30, 11/211

Dynamics of Knowledge and Belief

11:30–13:00 *Quantitative Appr*	• From Syntactical to Semantical and Expedient Information – a Survey *Wilhelm Rödder, Elmar Reucher* • A Probabilistic Approach to Data Fusion *Jens Fisseler, Imre Feher* • On a Conditional Irrelevance Relation for Belief Functions based on the Operator of Composition *Radim Jirousek*
13:00–14:30	Lunch
14:30–16:00 *Belief Revision*	• Reason Maintenance and the Ramsey Test *Haythem O. Ismail* • Subjective Models and Multi-agent Static Belief Revision *Guillaume Aucher* • What You Should Believe: Obligations and Beliefs *Guido Boella, Celia da Costa Pereira, Gabriella Pigozzi, Andrea Tettamanzi, Leendert van der Torre*
16:00–16:30	Coffee Break
16:30–17:30 *Ontologies and Description Logics*	• On the Conservativity and Stability of Ontology-revision Operators Based on Reinterpretation *Özgür Özcep, Carola Eschenbach* • Dynamic T-Box-Handling in Agent-Agent-Communication *Moritz Goeb, Peter Reiss, Bernhard Schiemann, Ulf Schreiber*

After the Workshop:

17:30–18:00	
Achtung: geänderte Anfangszeit!	**Mitgliederversammlung der GI-Fachgruppe Wissensrepräsentation und Schließen**

Foundations of Artificial Intelligence – FAInt-07

14:00–15:20	**Keynote by Wolfgang Maass, TU Graz, Austria:** The difficult search for intelligence in neural circuits.
15:20–15:40	*Kai-Uwe Kühnberger, Tonio Wandmacher, Angela Schwering,* *Ekaterina Ovchinnikova, Ulf Krumnack, Helmar Gust, Peter Geibel* Modeling Human-Level Intelligence by Integrated Cognition in a Hybrid Architecture
15:40–16:00	*Sebastian Rudolph* Relational Exploration – Reconciling Plato and Aristotle
16:00–16:30	Coffee Break
16:30–16:50	*Matthias Knorr, Pascal Hitzler* A Comparison of Disjunctive Well-founded Semantics
16:50 – 17:10	*Ander Altuna* Imagining Contexts
17:10–17:30	*Pascal Hitzler, Andreas Eberhart* Description Logic Programs: Normal Forms

Monday, September 10, 9:30–18:00, 15/115

Towards Ambient Intelligence: Methods for Cooperating Ensembles in Ubiquitous Environments (AIM-CU)

The program was not yet known at the time of print

Monday, September 10, 9:30–18:00, 11/216

Behaviour Monitoring and Interpretation

9:30–11:00   *Björn Gottfried*
Welcome

Gennady Andrienko, Natalia Andrienko
Extracting Patterns of Individual Movement Behaviour from a Massive Collection of Tracked Positions

Alexandra Millonig, Georg Gartner
Monitoring Pedestrian Spatio-Temporal Behaviour

11:00–11:30   Coffee Break

11:30–13:00   *Peter Kiefer, Christoph Schlieder*
Exploring Context-Sensitivity in Spatial Intention Recognition

Thomas Wagner, Tjorben Bogon, Carsten Elfers
Incremental Generation of Abductive Explanations for Tactical Behavior

Mareike Kritzler, Lars Lewejohann, Antonio Krüger
Analysing Movement and Behavioural Patterns of Laboratory Mice in a Semi Natural Environment based on Data collected via RFID-Technology

13:00–14:30   Lunch

14:30–16:00   *Yohei Kurata, Max Egenhofer*
The 9+-Intersection for Topological Relations between a Directed Line Segment and a Region

Nico Van de Weghe, Peter Bogaert, Anthony G. Cohn, Matthias Delafontaine, Leen De Temmerman, Tijs Neutens, Philippe De Maeyer, Frank Witlox
How to Handle Incomplete Knowledge Concerning Moving Objects

Pierre Hallot, Roland Billen
Spatio-temporal configurations of dynamics points in a 1D space

16:00–16:30   Coffee Break

16:30–18:00   *Hamid Aghajan, Chen Wu*
From Distributed Vision Networks to Human Behavior Interpretation

Kasim Terzic, Lothar Hotz, Bernd Neumann
Division of Work During Behaviour Recognition – The SCENIC Approach

Teresa Heitor, Ana Tomé, Paulo Dimas, João Pedro Silva
Measurability, Representation and Interpretation of Spatial Usage in Knowledge-Sharing Environments - A Descriptive Model Based on WiFi Technologies

3rd Workshop on Knowledge Engineering and Software Engineering (KESE 2007)

Martin Atzmueller
Experience Management with Task-Configurations and Task-Patterns for Descriptive Data Mining

Klaus-Dieter Althoff, Kerstin Bach, Jan-Oliver Deutsch, Alexandre Hanft, Jens Mänz, Thomas Müller, Régis Newo, Meike Reichle, Martin Schaaf, Karl-Heinz Weis
Collaborative Multi-Expert-Systems - Realizing Knowledge-Lines with Case Factories and Distributed Learning Systems

Ulrich Furbach, Claudia Obermaier
Knowledge Compilation for Description Logics

Grzegorz J. Nalepa, Igor Wojnicki
Knowledge-Based Approach to the Executable Design Concept

Grzegorz J. Nalepa, Igor Wojnicki
Proposal of Generalized Rule Programming Model

Grzegorz J. Nalepa, Igor Wojnicki
Using UML for Knowledge Engineering – A Critical Overview

Workshop X

Monday, September 10, 17:00–18:00, 11/217

Mitgliederversammlung der Fachgruppe Kognition der GI

Zu diesem Workshop laden wir die Mitglieder der Fachgruppe "Kognition" der GI und alle Interessierten herzlich ein. Auf dem Workshop sollen zukünftige Schwerpunkte der Fachgruppe und Interaktionen mit anderen Fachgruppen diskutiert werden. Ein wichtiger Punkt wird die Vorstellung und Wahl der zukünftigen Sprecher sein. Wir würden uns über eine zahlreiche Teilnahme an diesem Workshop freuen, um den wichtigen Bereich der "Kognition" innerhalb der GI zu stärken.

Public Events at the Workshops

All workshops are open to all participants of the conference all the time. The following keynote talks and assemblies may be of particular interest for a general audience, even if not participating at the rest of the respective workshops:

9:30–10:30 15/111	WS II	Invited Talk (*Stefan Wrobel*) Recent Approaches to Pattern Discovery and Ranking with Graphs
14:00–15:20 11/214	WS VI	Keynote (*Wolfgang Maass*) The difficult search for intelligence in neural circuits
14:30–15:30 15/111	WS II	Invited Talk (*Edwin Hancock*) *t*.b.a.
17:00–18:00 11/217	WS X	Mitgliederversammlung FG Kognition
17:30–18:00 15/114	WS V	Mitgliederversammlung FG Wissensrepräsentation & Schließen

The Role of AI in Shaping Smart Services and Smart Systems

Services and Systems must include a set of features to remain competent and future-conform: intelligent behaviour, personalisation, adaptivity, scalability, manageability, ease of use and user friendliness, security, and self-healing capabilities. As a consequence, new architectural models are needed, which provide the users with access to a cognitive behaviour aspect of the system, and which may draw inspiration from the brain sciences. On the other hand, we have to use knowledge representation and semantic modeling, e.g., ontologies for representing our environment or basic properties of services and systems. This would naturally involve Agent Technology, AI, and Software Technology. So, approaches from many different disciplines have to work in integration.

Integrated frameworks handling such different aspects are called "Serviceware Frameworks". They contain a scalable Service Architecture which facilitates merging different selected features into a service, as well as a scalable so-called Service Engine with a Serviceware Infrastructure. For creating Smart Services and Smart Systems, we use engineering approaches that include innovative service description languages and tools. In this presentation, a framework with the properties and features just described will be presented. A sample application developed with this framework will also be presented: the "Smart Energy Assistant".

is the chair of the professorship on Agent Technologies in Business Applications and Telecommunication (AOT) at TU Berlin. He is the founder and head of the DAI-Labor, currently employing about 100 researchers and support staff. Prof. Albayrak is one of the founding members of Deutsche Telekom Laboratories (T-Labs) and currently member of the steering board. He was the initiator of many reputable research projects, e.g.: E@MC2, Sun-Trec, in which he has been supervising research networks at national and international levels. He is also a member of various industrial and political advisory committees, e.g.: *Impulskreis „Vernetzte Welten"*.

Sahin Albayrak

Tuesday, September 11, 16:00, Aula

Applying Machine Learning Techniques to Detect Malicious Code in Network Traffic

In a recent online safety survey conducted by America Online and the National Cyber Security Alliance (NCSA) 81% of the respondents were found to be lacking recently-updated anti-virus software, a properly-configured firewall, and/or spyware protection. Nevertheless, 74% of the respondents use the Internet for "sensitive" transactions from home computers, such as banking, stock trading, or reviewing personal medical information. One way to prevent users from being infected by such threats is to clean the traffic at the NSP level. In this talk I will present a system for an Early Detection, Alert and Response (eDare) aimed at cleaning NSP traffic. The proposed system employs powerful network traffic scanners for cleaning traffic from known threats. Remaining suspicious traffic is monitored and Machine Learning (ML) algorithms are invoked for identifying unknown threats. Neural Networks and Bayesian Networks are used for static code analysis in order to determine whether a file contain malicious code. Temporal reasoning techniques are being used to analyze the spread of malicious code in the network. The ML algorithms are being evaluated and preliminary results are very promising. The eDare system was deployed and tested in a security lab with segregated pure and infected environments. We have collected a massive repository of over 30,000 executable threats of various kinds and have used them to train and test the effectiveness of eDare. We were able to reach an automatic detection rate of over 96% with less than 4% false positive.

is the director of Deutsche Telekom Laboratories at BGU, and a senior lecturer at the department of Information Systems Engineering, Ben-Gurion University. He holds B.Sc. and M.Sc. (1991) degrees in Computer and Electrical Engineering from the Ben-Gurion University of the Negev, and Ph.D. in Information Systems from Tel-Aviv University (2000). His main research interests are information warfare, data mining, information retrieval, and detection of malicious code.

Yuval Elovici

Wednesday, September 12, 9:15, Aula

Location-Based Activity Recognition

Knowledge of a person's location provides important context information for many applications, ranging from services such as E911 to personal guidance systems that help cognitively impaired individuals move safely through their community. Location information is also extremely helpful for estimating a person's high-level activities. In this talk we show how Bayesian filtering and conditional random fields can be applied to estimate the location and activity of a person using sensors such as GPS or WiFi. The techniques track a person on graph structures that represent a street map or a skeleton of the free space in a building. We also show how to learn a user's significant places and daily movements through the community. Our models use multiple levels of abstraction so as to bridge the gap between raw GPS measurements and high level information such as a user's mode of transportation, her current goal, and her significant places (e.g. home or work place). Finally, we will discuss recent work on using a multi-sensor board so as to better estimate a person's activities.

Dieter Fox

is Associate Professor and Director of the Robotics and State Estimation Lab in the Computer Science & Engineering Department at the University of Washington, Seattle. He obtained his Ph.D. from the University of Bonn, Germany. Before joining UW, he spent two years as a postdoctoral researcher at the CMU Robot Learning Lab. His research focuses on probabilistic state estimation in robotics and activity recognition. Along with his colleagues, he introduced particle filters as a powerful tool for state estimation in robotics. Dr. Fox has published over 100 technical papers and is co-author of the textbook *Probabilistic Robotics*. He has been on the editorial board of the Journal of Artificial Intelligence Research and the IEEE Transactions on Robotics; he will be program co-chair of AAAI-08.

Dr. Fox has received several awards for his research, including an NSF CAREER award and best paper awards at robotics (IROS-98, ICRA-00, RoboCup-04) and AI conferences (AAAI-98, AAAI-04).

Wednesday, September 12, 16:00, Aula

Artificial Intelligence is Engineering Intelligence – Why should we care about Natural Intelligence?

Artificial Intelligence is about designing and constructing artifacts, normally not about explaining human intelligence. So, why should we care about natural intelligence when talking about AI? There are several important more or less recent findings in brain science as well as ethology, which require a deeper rethinking on the AI side. Based on them, the hypothesis in this talk is: The rising complexity of the behaviour system and of personalized social relationships was one of the major reasons for developing intelligence -- contrary to the huge resource consumption that intelligence costs an individual. The most important result of this development was the capability of forecasting the behaviour of conspecifics for survival in a complex social environment. This capability was also useful for other purposes, including forecasting behaviour of individuals of other species and nature itself.

A second focus in the talk will be language and the hypothesized reasons or causes for its evolution and its primary usages. This will lead to the concept of imitation and its neural basis. Some plausible speculations will be given, why all these findings fit into a relatively consistent picture of natural intelligence. The conclusion will be some examples on how these findings can inspire AI research and the construction of AI systems.

is the managing director of the Fraunhofer "*Institut für Intelligente Analyse und Informationssysteme*" (IAIS) in Sankt Augustin. He holds a diploma degree in mathematics (U. Bonn) and a doctorate in computer science (U. Hamburg). Since 1990, he is a full professor for Artificial Intelligence at the U. of Bielefeld. He was a member of the German Science Council (*Wissenschaftsrat*) 1998–2004. He is the speaker of the DFG Priority Program "*Kooperative Teams von mobilen Robotern in dynamischen Umgebungen*" (SPP-1125). His research has contributed to the areas of natural language processing, knowledge-based systems and robotics, where using AI methods in robotics are currently the focus of his research.

Thomas Christaller

Early history and perspectives of Automated Deduction

With this talk we want to pay tribute to the late Professor Gerd Veenker who deserves the historic credit of initiating the formation of the German AI community. We present a summary of his scientific contributions in the context of the early approaches to theorem proving and, against this background, we point out future perspectives of Automated Deduction for AI.

Wolfgang Bibel

is currently Professor emeritus for Intellectics at the Department of Computer Science of the Darmstadt University of Technology in Germany. He also maintains an affiliation with the University of British Columbia in Vancouver, Canada, as an Adjunct Professor. His more than 200 publications including about 20 books cover a variety of topics in Artificial Intelligence/Intellectics and applications as well as science and technology foresighting analyses. He is one of the founders of Artificial Intelligence in Germany and Europe and received numerous awards from various organizations, most recently the Herbrand Award from the international organization for Automated Deduction (CADE Inc).

CoTeSys – Cognition for Technical Systems

The CoTeSys cluster of excellence investigates cognition for technical systems such as vehicles, robots, and factories. *Cognitive technical systems* (CTS) are information processing systems equipped with artificial sensors and actuators, integrated and embedded into physical systems, and acting in a physical world. They differ from other technical systems as they perform *cognitive control* and have *cognitive capabilities*. *Cognitive control* orchestrates reflexive and habitual behavior in accord with long-term intentions. *Cognitive capabilities* such as perception, reasoning, learning, and planning turn technical systems into systems that *"know what they are doing"*. The cognitive capabilities will result in systems of higher reliability, flexibility, adaptivity, and better performance. They will be easier to interact and cooperate with.

Martin Buss

has received a diploma engineer degree in Electrical Engineering (Technical U. Darmstadt, 1990), the Doctor of Engineering degree in Electrical Engineering (U. Tokyo, Japan, 1994) and a habilitation in Electrical Engineering and Information Technology (Technische Universität München, 2000). In 1988 he was a research student at the Science University of Tokyo, Japan. In the past, he was affiliated with the Dept. of Systems Engineering, Australian National University, Canberra (postdoc, 1994/5), the Institute of Automatic Control Engineering, Dept. of Electrical Engineering and Information Technology at Technische Universität München (senior research assistant and lecturer, 1995-2000), the Inst. of Energy and Automation Technology, Faculty IV – Electrical Engineering and Computer Science at Technical U. Berlin (full professor, 2000-2003). Since 2003, he is full professor (chair) at the Inst. of Automatic Control Engineering at Technische Universität München. Since 2006 he is the coordinator of the DFG Excellence Research Cluster "Cognition for Technical Systems" – CoTeSys. His research interests include automatic control, mechatronics, multi-modal human-system interfaces, optimization, nonlinear, and hybrid discrete-continuous systems.

Thursday, September 13, 10:30, Aula

DFG Session

This is a session featuring short invited talks describing the state of three larger DFG financed, AI related programs. Talks (~15 min. each) will address:

- Introduction (*Ulrich Furbach*, Univ. Koblenz)
- AI funding by DFG (*Gerit Sonntag*, DFG)
- SFB-TR 8 (*Christian Freksa*, Univ. Bremen)
- SFB 378 (*Jörg Siekmann*, Univ. Saarland)
- PAK 275 (*Michael Thielscher*, TU Dresden)
- Nachwuchsgruppe "Humanoide Roboter" (*Sven Behnke*, Univ. Freiburg)

Tuesday, September 11, 14:00–15:30, Aula

Best Paper Session

This is a single track session featuring the three papers that have been short-listed for the **Springer Best Paper Award**. And the winner is: ... (to be announced at the Conference Dinner).

- Pinpointing in the Description Logic EL+
  Franz Baader, Rafael Penaloza and Boontawee Suntisrivaraporn

- Relational Neural Gas
  Barbara Hammer and Alexander Hasenfuss

- A Stochastic Local Search Approach to Vertex Cover
  Silvia Richter, Malte Helmert and Charles Gretton

Tuesday, September 11, 11:00–12:30 (**Parallel Sessions**)

Knowledge Representation: Probabilistic Approaches

Location: 15/E07

- Resolving Inconsistencies in Probabilistic Knowledge Bases
  Marc Finthammer, Gabriele Kern-Isberner and Manuela Ritterskamp

- Extending Markov Logic to Model Probability Distributions in Relational Domains
  Dominik Jain, Bernhard Kirchlechner and Michael Beetz

Knowledge Representation: Other Topics

Location: 15/E10

- A multilingual framework for searching definitions on web snippets
  Alejandro Figueroa and Guenter Neumann

- A SPARQL Semantics based on datalog
  Simon Schenk

- Negation in Spatial Reasoning - A computational Approach.
  Stefan Schleipen, Marco Ragni and Thomas Fangmeier

Perception: Cognition-Related Approaches

Location: 11/214

- A Computational Model of Bistable Perception-Attention Dynamics with Long Range Correlations
  Norbert Fürstenau

- On Constructing a Communicative Space in HRI
  Claudia Muhl, Yukie Nagai and Gerhard Sagerer

- Natural Language Descriptions of Human Behavior from Video Sequences
  Carles Fernández Tena and Jordi Gonzàlez

Planning

Location: Aula

- Solving Decentralized Continuous Markov Decision Problems with Structured Reward
  Emmanuel Benazera

- Options in Readylog Reloaded - Generating Decision-theoretic Plan Libraries in Golog
  Lutz Boehnstedt, Alexander Ferrein and Gerhard Lakemeyer

- On the Construction and Evaluation of Flexible Plan-Refinement Strategies
  Bernd Schattenberg, Julien Bidot and Susanne Biundo

Wednesday, September 12, 11:00–12:30 (**Parallel Sessions**)

Knowledge Representation: Description Logics

Location: Aula

- Integrating Action Calculi and Description Logics
  Conrad Drescher and Michael Thielscher

- Any-World Access to OWL from Prolog
  Tobias Matzner and Pascal Hitzler

- Applying Logical Constraints to Ontology Matching
  Christian Meilicke and Heiner Stuckenschmidt

Learning

Location: 15/E10

- A General Framework for Encoding and Evolving Neural Networks
  Yohannes Kassahun, Jan Hendrik Metzen, Jose de Gea, Mark Edgington and Frank Kirchner

- Making a Robot Learn to Play Soccer Using Reward and Punishment
  Heiko Müller, Martin Lauer, Roland Hafner, Sascha Lange, Artur Merke and Martin Riedmiller

- Perception and Developmental Learning of Affordances in Autonomous Robots
  Lucas Paletta, Gerald Fritz, Florian Kintzler, Jörg Irran and Georg Dorffner

Perception: Shape

Location: 15/E07

- Detecting Humans in 2D Thermal Images by Generating 3D Models
  Andreas Birk and Stefan Markov

- Extent, Extremum, and Curvature: Qualitative Numeric Features for Efficient Shape Retrieval
  Björn Gottfried, Arne Schuldt and Otthein Herzog

- Extraction of partially occluded elliptical objects by Modified Randomized Hough Transform
  Kwangsoo Hahn, Youngjoon Han and Hernsoo Hahn

Search

Location: 11/214

- Learning how to Play Hex
  Stefan Edelkamp, Lars Hildebrand and Kenneth Kahl

- Stochastic Functional Annealing as Optimization Technique. Application to the Traveling Salesman Problem with Recurrent Networks
  Domingo López-Rodríguez, Enrique Mérida-Casermeiro, Gloria Galán-Marín and Juan M. Ortiz-de-Lazcano-Lobato

Poster Session

Wednesday, September 12, 14:00–15:30, Foyer

- A Connectionist Architecture for Learning to Play a Simulated Brio Labyrinth Game
  Larbi Abdenebaoui, Elsa A. Kirchner, Yohannes Kassahun and Frank Kirchner
- Divergence versus Convergence of Intelligent Systems: Contrasting Artificial Intelligence with Cognitive Science
  Stefan Artmann
- Deep Inference for Automated Proof Tutoring?
  Christoph Benzmüller, Dominik Dietrich, Marvin Schiller and Serge Autexier
- Exploiting Past Experience -- Case-Based Decision Support for Soccer Agents
  Ralf Berger and Gregor Lämmel
- Externalizing the Multiple Sequence Alignment
  Stefan Edelkamp and Peter Kissmann
- Text Generation in the SmartWeb Multimodal Dialogue System
  Ralf Engel and Daniel Sonntag
- A Method to Optimize the Parameter Selection in Short Term Load Forecasting
  Humberto Fioravante Ferro, Raul Wazlawick, Cláudio Magalhães de Oliveira and Rogério Cid Bastos
- Visual Robot Localization and Mapping based on Attentional Landmarks
  Simone Frintrop
- Bridging the Sense-Reasoning Gap using the Knowledge Processing Middleware DyKnow
  Fredrik Heintz, Piotr Rudol and Patrick Doherty
- Emotion Based Control Architecture for Robotics Applications
  Jochen Hirth, Tim Braun and Karsten Berns
- Inductive Synthesis of Recursive Functional Programs – A Comparison of Three Systems
  Martin Hofmann, Andreas Hirschberger, Emanuel Kitzelmann and Ute Schmid
- Training on the Job – Collecting Experience with Hierarchical Hybrid Automata
  Alexandra Kirsch and Michael Beetz
- Selecting Users for Sharing Augmented Personal Memories
  Alexander Kröner, Nathalie Basselin, Michael Schneider and Junichiro Mori
- Knowledge Based Design of Intelligent Simulation Environments
  Marc Erich Latoschik
- Prolog-Based Real-Time Intelligent Control of the Hexor Mobile Robot
  Piotr Matyasik, Grzegorz Nalepa and Piotr Ziecik
- Improving the Detection of Unknown Computer Worms Activity using Active Learning
  Robert Moskovitch, Nir Nissim, Dima Stopel, Clint Feher, Roman Englert and Yuval Elovici
- The Behaviour-Based Control Architecture iB2C for Complex Robotic Systems
  Martin Proetzsch, Tobias Luksch and Karsten Berns
- Concept for Controlled Self-Optimization in Online Learning Neuro-Fuzzy Systems
  Nils Rosemann and Werner Brockmann
- LiSA: A Robot Assistant for Life Sciences
  Erik Schulenburg, Norbert Elkmann, Markus Fritzsche, Angelika Girstl, Stefan Stiene and Christian Teutsch
- Semantic Graph Visualisation for Mobile Semantic Web Interfaces
  Daniel Sonntag and Philipp Heim
- A Qualitative Model for Visibility Relations
  Francesco Tarquini, Giorgio De Felice, Paolo Fogliaroni and Eliseo Clementini
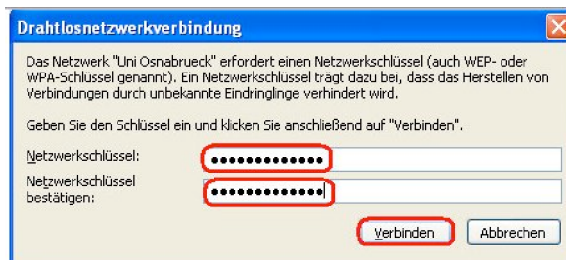
WLAN Internet Access

Internet can be accessed via WLAN in the conference area:

Connect with the access point with the SSID:
Uni Osnabrueck
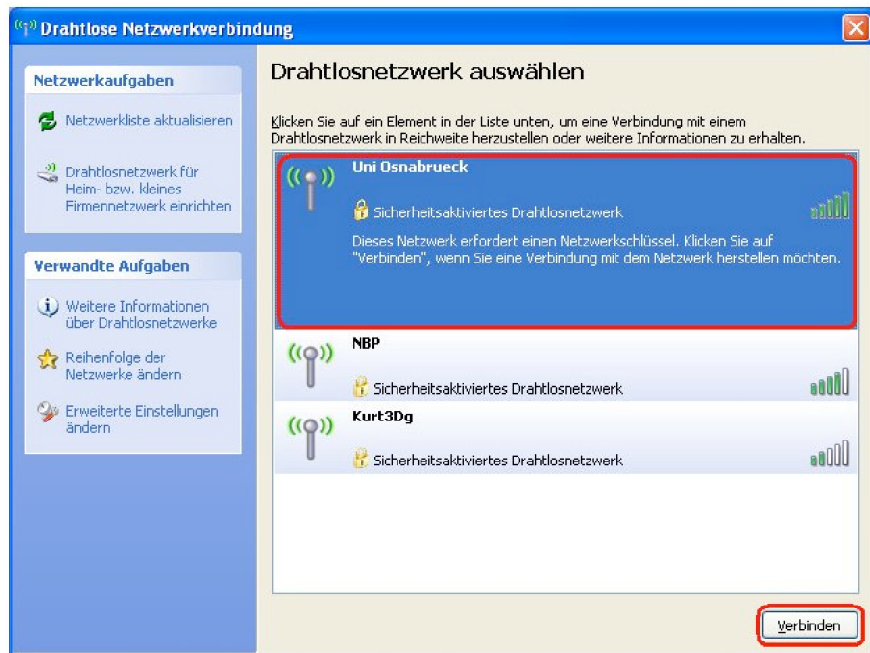
The encryption is WEP 128 bit ASCII. The encryption key is

`E.9w5h+.+oecF`

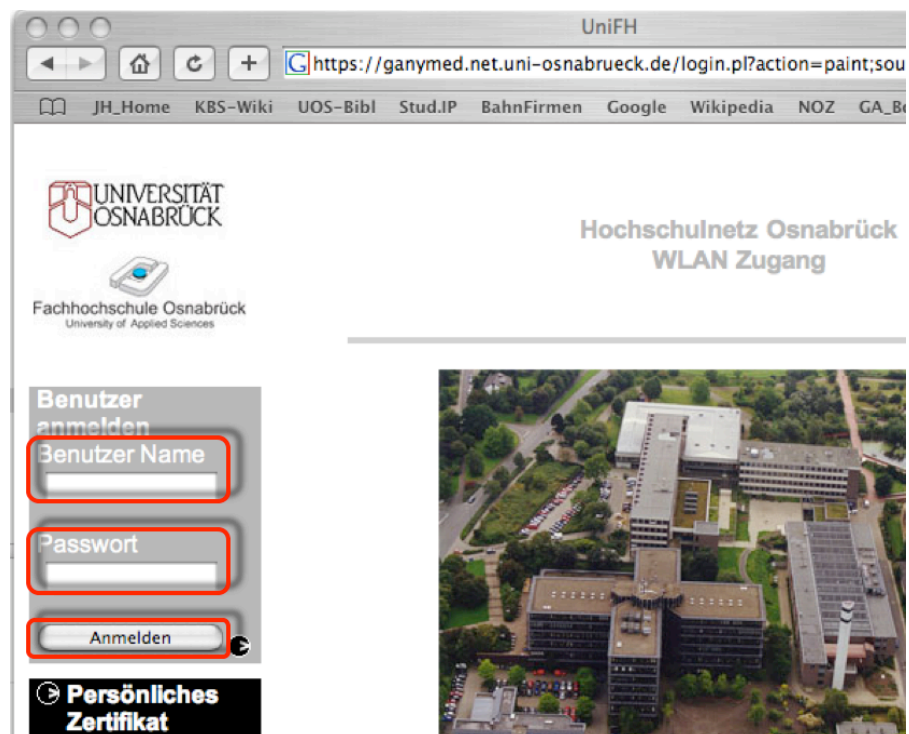Use your favorite Web browser to login. You find a personal

`Login name`

and

`Password`

in your registration documents.

(At termination of your session, please remember to logout.)

The city of peace, Osnabrück, is the third largest city in Lower Saxony with 164,000 inhabitants. It is the only German city which is situated in a national park – the *UNESCO Geo park TERRA.vita*, which includes the Teutoburg Forest and the *Wiehengebirge*.

Osnabrück is a university and diocesan town, and the German Foundation for the Environment and the German Foundation for Peace Research are based here. Because Osnabrück is the city of the Peace of Westphalia and the home town to painter Felix Nussbaum and writer Erich Maria Remarque, it has committed itself to the idea of peace.

Tourist information

Osnabrück | Osnabrück region
Bierstraße 22 – 23
49074 Osnabrück, Germany
Tel.: 0049 (0)541 323-2202
Fax: 0049 (0)541 323-2709

Open Monday to Friday 9.30 a.m. to 6 p.m.;
Saturday 10 a.m. to 4 p.m.

A city steeped in history

The history of Osnabrück began in 780, when the Emperor Charlemagne founded a mission on the banks of the River Hase. In 1002, the Bishop of Osnabrück was granted a charter to hold a market, mint coins and collect customs dues. Osnabrück developed, as a member of the Hanseatic League from 1412 to 1669, into a cultural and commercial centre open to the world.

The long, rich history of Osnabrück is apparent on every corner, with the remains of the old city wall and its watchtowers, the castle dating from the 17th century and the town hall where the Peace of Westphalia was declared in 1648, bringing an end to the Thirty Years' War. They all make Osnabrück's history come to life. The historical old quarter of the city is particularly well preserved, with narrow winding alleys and old half-timbered houses that continue to lend it medieval charm right up to the present day.

The local organizers' favorite local museum

The city is the site of the museum of the internationally renowned painter Felix Nussbaum, who was born in Osnabrück in 1904. Nussbaum, who died in 1944 in Auschwitz concentration camp, is regarded as one of the major painters of the 20th century. This unique museum, created by the architect Daniel Libeskind, captivates the visitor with its highly individual structure and unusual interior design.

Felix-Nussbaum Haus, Lotter Str. 2
www.osnabrueck.de/10763.asp

Osnabrück Conference Locations
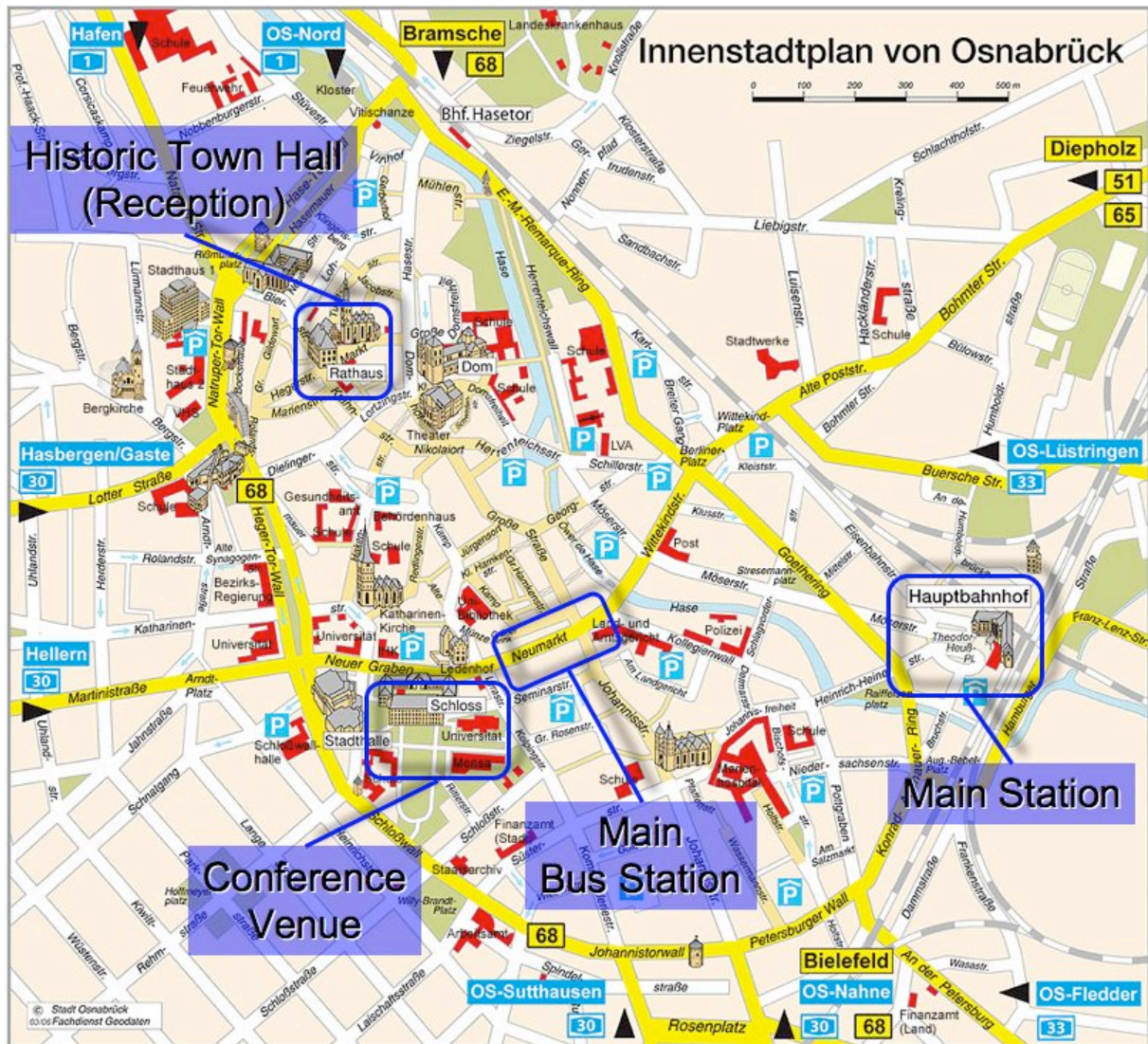
Reception (Tuesday, Sep 11, 19:00)

… will take place in the Historic Town Hall, see city map above

Conference Dinner (Wednesday, Sep 12, 19:30)

… will take place in the *Piesberger Gesellschaftshaus* (Glückaufstr. 1, www.piesberger-gesellschaftshaus.de), a historic building of the late 1800s in the outskirts of Osnabrück, which was built as a celebration and recreation place for the local mining workers.

Directions how to get there by bus transfer or individually will be given at the conference.

Places to Eat Lunch

… can be found plenty if you leave the *Schloss* area towards North, cross *Neuer Graben* and head straight towards the City Center.
Alternatively, you can eat lunch in the *Mensa* on campus.

Site Map

The KI-2007 conference program takes place in the main building (Schloss) of the University of Osnabrück and neighboring buildings:
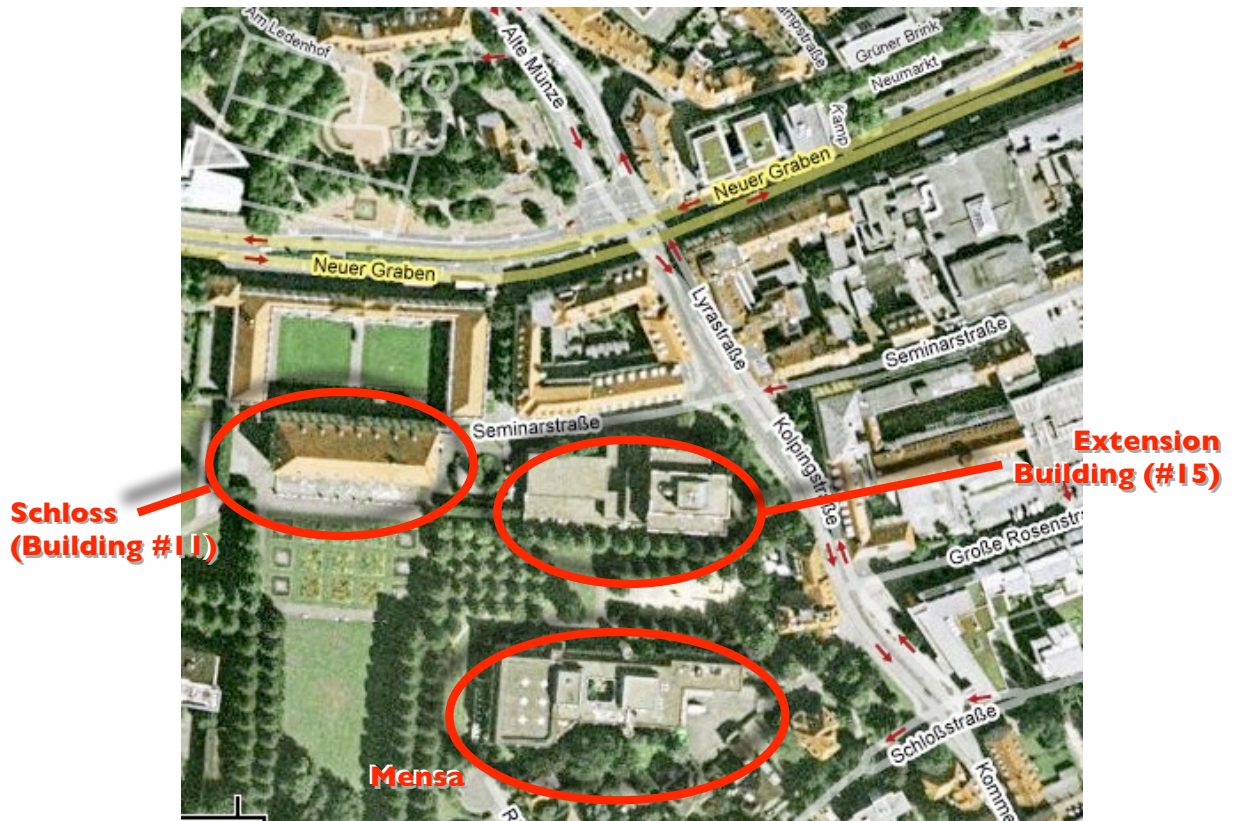
Rooms

The following rooms play a role in the conference program:
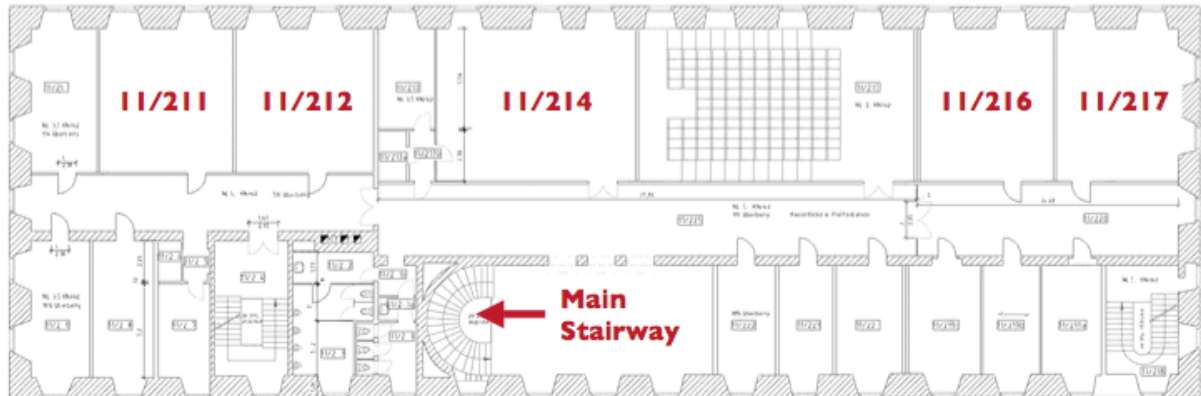
Schloss (Building #11)

- Reception Desk
- Aula
- Foyer
- 211 (2nd floor above ground level)
- 212 (2nd floor)
- 214 (2nd floor)
- 216 (2nd floor)
- 217 (2nd floor)
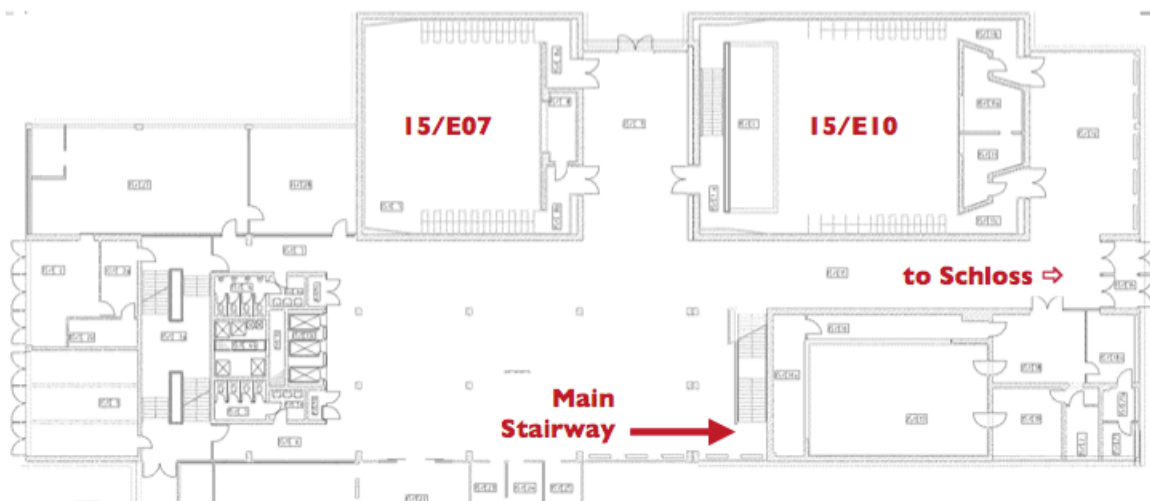
Extension Building (#15)

- E07 (ground level)
- E10 (ground level)
- 111 (1st floor above ground level)
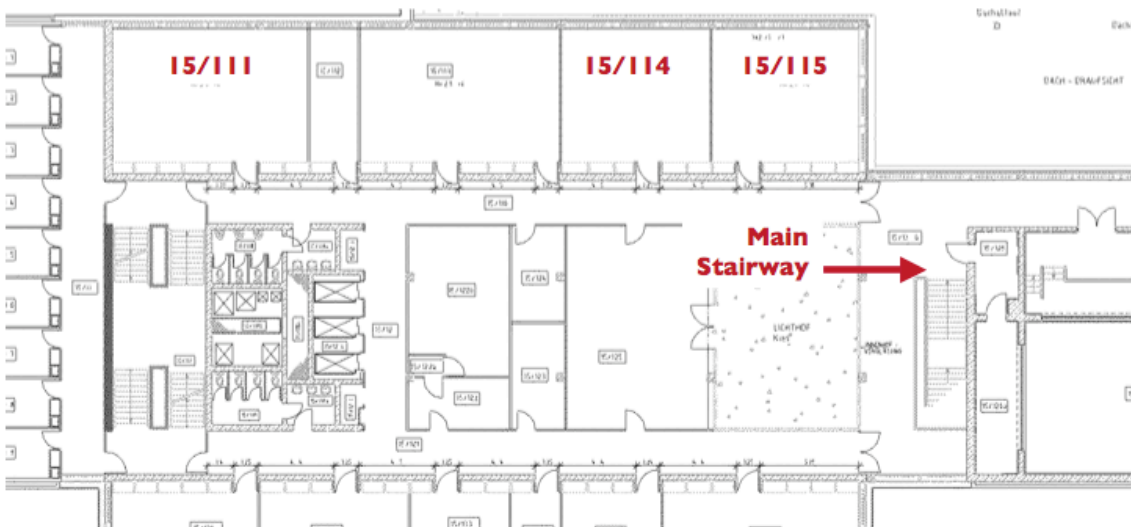- 114 (1st floor)
- 115 (1st floor)

Floor Plans

Building 11 (Schloss), 2nd floor

Building 15, Ground Level

Building 15, 1st Floor

Responsible organization

Gesellschaft für Informatik e.V. (GI)

Hosting organization

Universität Osnabrück

Main sponsor

Deutsche Telekom Laboratories, Berlin

Other sponsors

• City of Osnabrück

• DFG

• Springer Verlag

• The State of Niedersachsen

Mark your calendar:

KI 2008, 23.–26.9.2008, Kaiserslautern

KI2008.dfki.uni-kl.de

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