

KI 2007 – 30th Annual German Conference on Artificial Intelligence

Osnabrück, Germany, September 10–13

Joachim Hertzberg

The annual German Conference on Artificial Intelligence (“KI”) will be held for the 30th time in 2007. As usual, the KI conference aims at providing a forum for both researchers and practitioners, offering a technical program of carefully reviewed original research and application papers. All talks and papers will be presented in English.

The University of Osnabrück is proud of hosting the KI conference for the first time. 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 research and education is also visibly present in its young Informatics institute.

The KI 2007 technical program comprises six invited talks, technical paper and poster presentations, two tutorials and ten workshops – all in all covering the whole field of AI, including its foundations, its history and its applications. Consistent with the local spirit of Osnabrück University, some emphasis is put on AI as a part of Cognitive Science, as in topics like technical cognitive systems and cognitive vision.

The best paper, as chosen by the program committee, will be awarded the Springer Best Paper Award. It will be presented, together with two other papers from the best paper shortlist, in a single-track session on Thursday, September 13.

The conference will take place in University buildings in the city center, with the historic Old Town, many restaurants and hotels, and the main train and bus stations within walking distance.

Everybody is invited to come to Osnabrück, to join and enjoy the KI 2007 conference! For further information about the conference, please consult

www.ki2007.uos.de

The Conference Program at a Glance

	Su 9.9.2007	Mo 10.9.2007	Tu 11.9.2007	We 12.9.2007	Th 13.9.2007
9:00			9:00 Opening		
9:30		9:30 Tuto/Work V	9:15 Invited Talk I	9:15 Invited Talk III	9:30 Invited Talk Bibel
10:00					
10:30			10:30 Coffee	10:30 Coffee	10:30 Coffee
11:00		11:00 Coffee	11:00 Tech. Talks (Parallel Track)	11:00 Tech. Talks (Parallel Track)	11:00 Tech. Talks
11:30		11:30 Tuto/Work V			Best Paper Session (until 11:45)
12:00			12:30 Lunch	12:30 Lunch	12:00 Invited Talk V
12:30					
13:00		13:00 Lunch			
13:30			14:00 Tech. Talks (Parallel Track)	14:00 Poster Session	13:30 Farewell
14:00					
14:30		14:30 Tuto/Work N	15:30 Coffee	15:30 Coffee	
15:00			16:00 Invited Talk II (until 17:15)	16:00 Invited Talk IV (until 17:15)	
15:30		16:00 Coffee			
16:00		16:30 Tuto/Work N			
16:30					
17:00		18:00 FG Meeting			
17:30			19:00 Reception by City of Osnabrück	19:30 Dinner	
18:00					
19:00	19:00 Registration, Welcome	19:00 Welcome			
19:30					
20:00					
20:30					
21:00					

KI 2007: Organisation

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Invited Talks at KI 2007

The Role of AI in Shaping Smart Services and Smart Systems

Sahin Albayrak,
TU Berlin

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".



Sahin Albayrak 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“.

Early history and perspectives of Automated Deduction

Wolfgang Bibel,
TU Darmstadt

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

Martin Buss,
TU München

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 U. 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 U. 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 U. 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.

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

Thomas Christaller,
Fraunhofer IAIS, Sankt Augustin

Artificial Intelligence is about designing and constructing artefacts, 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.



Thomas Christaller 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.

Applying Machine Learning Techniques to Detect Malicious Code in Network Traffic

Yuval Elovici,
Ben Gurion University of the Negev,
Beer-Sheva, Israel

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.



Yuval Elovici 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.

Location-Based Activity Recognition

Dieter Fox,
U. of Washington, Seattle, USA

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).

KI 2007: Technical Program

Out of 81 submitted papers, 26 have been accepted for presentation (32%). In addition to these presentations, KI 2007 will include a poster session; the posters were chosen from submitted papers and from submissions in answer to a special call for posters.

Accepted Papers

- Pinpointing in the Description Logic EL+
Franz Baader, Rafael Penaloza and Boontawe Sontisrivara-porn
- Solving Decentralized Continuous Markov Decision Problems with Structured Reward
Emmanuel Benazera
- Detecting Humans in 2D Thermal Images by Generating 3D Models
Andreas Birk and Stefan Markov
- Options in Readylog Reloaded - Generating Decision-theoretic Plan Libraries in Golog
Lutz Boehnstedt, Alexander Ferrein and Gerhard Lakemeyer
- Real-time High Resolution Capture for Agent Representation
Hae Won Byun
- Integrating Action Calculi and Description Logics
Conrad Drescher and Michael Thielscher
- Learning how to Play Hex
Stefan Edelkamp, Lars Hildebrand and Kenneth Kahl
- A multilingual framework for searching definitions on web snippets
Alejandro Figueroa and Guenter Neumann
- Resolving Inconsistencies in Probabilistic Knowledge Bases
Marc Finthammer, Gabriele Kern-Isberner and Manuela Mark
- A Computational Model of Bistable Perception-Attention Dynamics with Long Range Correlations
Norbert Fürstenau
- 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
- Relational Neural Gas
Barbara Hammer and Alexander Hasenfuss
- Extending Markov Logic to Model Probability Distributions in Relational Domains
Dominik Jain, Bernhard Kirchlechner and Michael Beetz
- A General Framework for Encoding and Evolving Neural Networks
Yohannes Kassahun, Jan Hendrik Metzen, Jose de Gea, Mark Edgington and Frank Kirchner
- 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
- Any-World Access to OWL from Prolog
Tobias Matzner and Pascal Hitzler
- Applying Logical Constraints to Ontology Matching
Christian Meilicke and Heiner Stuckenschmidt
- On Constructing a Communicative Space in HRI
Claudia Muhl, Yukie Nagai and Gerhard Sagerer
- 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
- A Stochastic Local Search Approach to Vertex Cover
Silvia Richter, Malte Helmert and Charles Gretton
- On the Construction and Evaluation of Flexible Plan-Refinement Strategies
Bernd Schattenberg, Julien Bidot and Susanne Biundo
- A SPARQL Semantics based on datalog
Simon Schenk
- Negation in Spatial Reasoning - A computational Approach.
Stefan Schleipen, Marco Ragni and Thomas Fangmeier
- Natural Language Descriptions of Human Behavior from Video Sequences
Carles Fernández Tena and Jordi González

Accepted Posters

- 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 Benz Müller, 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
- Emotional Ontology for Automated Mark Up of Affective Information in Texts
Virginia Francisco and Pablo Gervás
- Visual Robot Localization and Mapping based on Attentional Landmarks
Simone Frintrop

- Proactive Knowledge Dissemination Through Content Based Recommendations
Sergiu Gordea, Markus Zanker and Markus Jessenitsching
- 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
- A Particle Swarm Based Neural Network for Defective Type Recognition on Transformers by Acoustic Emission
Chengchien Kuo
- 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
- Design and Implementation of a Mobile Tourist Guide Using a Web-Based Service Mashup
Norbert Reithinger, Sinan Sen and Benjamin Peters
- 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

Tutorials auf der KI 2007

T1: Visual Analytics: A New Cross-Disciplinary Field of Research

Gennady Andrienko, Natalia Andrienko,
Fraunhofer IAIS, Sankt Augustin

Tutorial Monday, Sep 10, 2007, Afternoon

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.

The program of the tutorial includes

1. Introduction of visual analytics
2. State of the art in visual representations and interaction technologies
3. Scalability challenge
4. Knowledge capture challenge
5. Visualisation and AI

T2: Preference Modeling, Elicitation, Representation, and Reasoning

Carmel Domshlak,
Technion, Haifa, Israel

Tutorial Monday, Sep 10, 2007, Morning

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.

KI 2007 – Workshops

Joachim Hertzberg

Workshops at a Glance

- W1: Applications of Spatial Cognition for Intelligent Assistance Systems
- W2: Learning from Non-Vectorial Data (LNVD 2007)
- W3: PuK 2007: 21. Workshop Planen, Scheduling und Konfigurieren/Entwerfen
- W4: 2nd Workshop "emotion and computing – current research and future impact"
- W5: Dynamics of Knowledge and Belief
- W6: Foundations of Artificial Intelligence – FAInt-07
- W7: Towards Ambient Intelligence: Methods for Cooperating Ensembles in Ubiquitous Environments (AIM-CU)
- W8: Behaviour Monitoring and Interpretation
- W9: 3rd Workshop on Knowledge Engineering and Software Engineering (KESE 2007)
- W10: Mitgliederversammlung der Fachgruppe *Kognition* der GI

Im Rahmen der 30. Jahrestagung Künstliche Intelligenz (KI 2007) in Osnabrück vom 10.-13.9.2007 finden am 10.9. die Workshops W1 bis W10 statt.

Mehr Informationen zu den Workshops finden Sie auf den angegebenen Web-Seiten. Informationen zur Tagung KI-2007 finden Sie unter www.ki2007.uos.de



W1: Applications of Spatial Cognition for Intelligent Assistance Systems

- **Organizers:** Thomas Barkowsky, Kai-Florian Richter, Michael Schellenbach
- **Web Site:** <http://www.sfbtr8.uni-bremen.de/ASCIAS>

AI is one of the main contributors to the interdisciplinary field of spatial cognition. Many AI-related research fields, for example cognitive computational modeling, autonomous robots, language processing, spatial reasoning and planning, or geographic information and navigation systems, contribute to the understanding of intelligent spatial information processing, both in natural and artificial systems. In this workshop, results and ideas that apply basic research from AI-related spatial cognition to intelligent spatial assistance scenarios will be presented and discussed.

A non-exhaustive list of possible fields of applications includes the area of wayfinding and navigational assistance. Here, questions regarding capturing a user's previous knowledge, aspects of personalization, integration of environmental features (e.g. landmarks), and path selection based on cognitive considerations may be addressed. The field

of service robotics and (semi-)autonomous machines may contribute work related to the support of the elderly, human-robot interaction, and safety and security issues. In architecture and design, cognitive approaches to computer-aided architectural design and (semi-)automatic spatial design are of interest.

The goal of the workshop is to bring together researchers working on approaches that are or may be employed for intelligent spatial assistance and that take into account and/or integrate results of cognitive science. We are particularly interested in applications, i.e. computational systems already being developed, or on current approaches that may end up in computational spatial assistance systems. Participants are asked to submit extended abstracts of 2-4 pages to illustrate their ideas and work, which will be reviewed by an international review committee.

W2: Learning from Non-Vectorial Data (LNVD 2007)

- **Organizers:** Peter Geibel, Brijnesh J. Jain
 - **Web Site:** www.ikw.uni-osnabrueck.de/~pgeibel/LNVD07/LNVD07.html
- In recent years, machine learning approaches that operate on non-vectorial data like sequences, trees, graphs, and logical descriptions have gained increasing importance. This is primarily due to new exciting application areas like bioinformatics, text/web mining, and computer linguistics.

In these fields, data is often represented by sequences, trees, and graphs of varying length. Examples are DNA molecules and proteins in bioinformatics, or words and documents in text mining. Recently, new powerful tools for solving classification tasks and other learning problems have been developed. Examples include string, tree, and graph kernels, learning in non-metric distance spaces, conditional random fields, learning in I/O space, spectral methods for graphs, probabilistic relational models, recurrent neural networks for structured data, inductive logic and functional programming, and multi-relational data mining.

This workshop aims at bringing together researchers from different

application fields and disciplines like bioinformatics, text mining, and computer linguistics to discuss the cross-fertilization of the different disciplines and the integration of symbolic/qualitative and sub-symbolic/quantitative approaches, which is one of the central questions in cognitive science.

Prospective authors are encouraged to submit papers and attend the workshop. Submissions are invited in three categories: technical papers reporting theoretical and/or experimental work (up to 8 pages), position/short papers (up to 4 pages), and software demos. Each paper will be reviewed by peers. The accepted papers will be included in the workshop proceedings, which will be published electronically in the PICS series of the University of Osnabrück. The deadline for all submissions is 22 June 2007. More details can be found at the workshop homepage.

W3: PuK 2007: 21. Workshop Planen, Scheduling und Konfigurieren/Entwerfen

- **Organizers:** Jürgen Sauer, Stefan Edelkamp, Bernd Schattenberg
- **Web Site:** www-is.informatik.uni-oldenburg.de/~sauer/puk2007/

The PuK workshop is the regular meeting of the special interest group on planning, scheduling, design and configuration within the AI section of the GI. In 2006 it could celebrate its 20th anniversary. As in previous years the PuK workshop will bring together researchers and practitioners of the areas of planning, scheduling, design and configuration. It provides a forum for the exchange of ideas, evaluations and experiences especially in the use of AI techniques within these application and research areas.

General Topics

The general topics of interest of the PuK community include but are not limited to:

- Applications and architectures
- Knowledge representation and problem solving techniques: domain-specific techniques; heuristic techniques; distributed problem solving; constraint-based techniques; iterative improvement; integrating reaction and user-interaction.
- Learning, i.e., learning in the context of planning, scheduling and design.

Focus Theme 2007: PuK on the Large Scale

As in earlier workshops we intend to focus on one area. This year we will focus on large scale search spaces often found within planning and configuration problems. Here we look for approaches that can reduce the limitations in time and space imposed by the hardware and software resources available today.

Besides this, further submissions from the above-mentioned general topics are welcome.

W4: 2nd Workshop “emotion and computing - current research and future impact”

- **Organizers:** Paul Levi, Dirk Reichardt
- **Web Site:** www.emotion-and-computing.de

In recent years computer science research has shown increasing efforts in the field of software agents which incorporate emotion. Several approaches have been made concerning emotion recognition, emotion modeling, generation of emotional user interfaces and dialogue systems as well as anthropomorphic communication agents. Motivations for emotional computing are manifold. From a scientific point of view, emotions play an essential role in decision making, as well as in perception and learning. Furthermore, emotions influence rational thinking and therefore should be part of rational agents as proposed by artificial intelligence research. Another focus is on human computer interfaces which include believable animations of interface agents.

The workshop will focus on the role of affect and emotion in computer systems including emotion recognition, emotion generation and emotion modeling with special attention to AI specific problems and applications. Both shallow and deep models of emotion are in the focus of interest. The goal is to provide a forum for the presentation of research as well as of existing and future applications and for lively discussions among researchers and industry. The presented papers will discuss theories, architectures and applications which are based upon emotional aspects of computing. We especially encourage prototype demonstrations in order to give a good basis for a subsequent discussion session.

Contributions are solicited from the following fields:

- Artificial Intelligence Research
- Cognitive Science and Cognitive Robotics
- Multi-agent System Technology
- Speech Synthesis and Speech Recognition
- Dialogue Systems
- Computer Game Development
- User Modeling and Personalization
- Applications using models of emotion
- Affective Computing

W5: Dynamics of Knowledge and Belief

- **Organizers:** Gabriele Kern-Isberner, Christoph Beierle
- **Web Site:** www.fernuni-hagen.de/wbs/dynamics07

Knowledge Representation is one of the major topics in AI. Its concerns are (logical) formalisms and reasoning, with the intention to explore and model the basics of intelligent behaviour. In recent years, intelligent agents in the contexts of open environments and multi agent systems have become the leading paradigm of the field. Consequently, modern KR methods have to deal not only with static scenarios, but also with dynamic modifications in knowledge and belief, due to uncertain or incomplete information, or to changes in the environment. Moreover, agents are often expected to learn from past experiences, or to interact with other agents, making use of their knowledge and adjusting their beliefs during argumentation.

The focus of this workshop, organized by the GI-Fachgruppe "*Wissensrepräsentation und Schließen*" is on dynamic processes concerning any changes that an agent's state of knowledge and belief may undergo. Modeling the continuous cycle of acquiring and applying knowledge is of particular interest, so work on relating learning and knowledge representation will be considered particularly useful. Moreover, considering the effects of belief changes on the agent's decisions and behaviour is also within the scope of the workshop.

Topics of interest include belief revision and belief update, nonmonotonic reasoning, argumentation, decision theory and preferences, action and change, as well as learning and knowledge discovery in data.

W6: Foundations of Artificial Intelligence – FAInt-07

- **Organizers:** Pascal Hitzler, Thomas Roth-Berghofer, Sebastian Rudolph
- **Web Site:** logic.aifb.uni-karlsruhe.de/wiki/FAInt-07

Within the course of the last 50 years, Artificial Intelligence has developed into a major field of research with a multitude of facets and application areas. While, in general, Artificial Intelligence research is driven by application needs, it is nevertheless a fact that foundational questions and theoretical insights have always been one of the driving forces behind its development. This includes the quest for realising intelligent behaviour in artificial systems as envisioned in the early days of AI research. But it also comprises biological inspirations e.g. for robot design, artificial neural networks, or emergent intelligence, as well as logical underpinnings of automated deduction and knowledge representation.

Indeed, formal and foundational aspects of artificial intelligence are being studied in many sub areas in order to serve application needs. It lies in the nature of such fundamental research that a critical mass of different formal perspectives can generate a cross-fertilization of ideas and applications. We therefore intend to bring together researchers working on foundational aspects of Artificial Intelligence across different communities, in order to stimulate an exchange of ideas and methods between them.

W7: Towards Ambient Intelligence: Methods for Cooperating Ensembles in Ubiquitous Environments (AIM-CU)

- **Organizers:** Thomas Kirste, Birgitta König-Ries, Ralf Salomon
 - **Web Site:** www.musama.de/aim-cu
- Smart homes, smart offices, intelligent classrooms, etc. have become an important research area. These environments aim at inferring user intentions from sensor data and they try to react with appropriate actions for assisting the user. Creating smart environments today is expensive, requiring a substantial deliberate design and implementation effort.

At the same time, ubiquitous computing makes "smart artifacts", the hardware infrastructure for smart environments, available everywhere – however, in an unstructured "grass roots" approach. This raises an interesting question: is it possible to let intelligent environments emerge from the interaction between the individual smart artifacts that coincidentally reside in the user's vicinity? Is it possible to devise strategies that allow a set of artifacts to form a coherently acting ensemble, without human configuration and supervision? Would approaches from distributed AI, multi-agent systems, and planning be an option? Or is automated service composition and semantic web technology the answer?

Within this workshop we want to discuss possible solutions for creating emergent intelligence in an ensemble of everyday artifacts.

W8: Behaviour Monitoring and Interpretation

- **Organizer:** Björn Gottfried
- **Web Site:** www.tzi.de/~bjoerng/WS-BMI

Monitoring what goes on in the environment, what people do and how they interact with their surroundings is of interest in several areas, such as in ambient intelligence applications and in particular in healthcare. This workshop focuses on methods analysing and interpreting the behaviour of single people, or of small groups of people. This is for the purpose of intention recognition, the triggering of smart home environments, or for the investigation of how people deal with specific problems or how they do specific things.

While much effort is spent on how to obtain information about the behaviour of people, e.g. by video-technologies, sensors equipped at bodies, and so on, the goal of this workshop is the high-level interpretation of the monitored behaviour. To make the vision of behaviour monitoring and interpretation a reality, there are many serious challenges that must be addressed including lack of complete information about the monitored behaviour or the imprecision of the obtained data. Furthermore, knowledge representation issues have to be considered in the context of intention recognition, and questions have to be answered concerning how to reason about behaviour patterns, e.g. for making predictions.

Format

This one-day workshop is intended as a forum for discussion, exchange of points of view, assessment of results and methods, and as a source of dissemination and promotion of the newest advances in the area of behaviour monitoring and interpretation. The program will include a number of presentations by the invitees representing several different aspects concerning the role of monitoring and interpreting behaviours of people and groups of people, followed by discussions.

The list of possible topics includes, but is not limited to knowledge representation and reasoning, pattern recognition, spatial reasoning, temporal reasoning, video and image analysis and interpretation, dynamic scene analysis, motion analysis, sensor equipments, pervasive technologies, and monitoring of diverse environments. Possible

application areas include health care, ambient intelligence and disaster management

W9: 3rd Workshop on Knowledge Engineering and Software Engineering (KESE 2007)

- **Organizers:** Joachim Baumeister, Dietmar Seipel
- **Web Site:** ki.informatik.uni-wuerzburg.de/KESE

Intelligent systems have been successfully developed in various domains over the last years. The process of building such systems is based on techniques and tools from the fields of knowledge engineering and software engineering. Thus, declarative software engineering techniques have been established in many areas, such as knowledge systems, logic programming, constraint programming, and lately in the context of the Semantic Web. The third workshop on Knowledge Engineering and Software Engineering (KESE 2007) wants to bring together researchers and practitioners from both fields of software engineering and artificial intelligence. The previous workshops on Knowledge Engineering and Software Engineering were held at the KI-2006 and KI-2005.

W10: Mitgliederversammlung der Fachgruppe Kognition der GI

- **Organizers:** Kerstin Schill, Christoph Schlieder
- **Time:** Mo, Sep 10, 17:00-18:00

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.