

NEWSLETTER

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Symposium
Computers and Art

Games, Argumentation,
and Logic Programming
(GALP) Symposium

Benelearn 2009

*News from the
Benelux Association
for Artificial Intelligence*

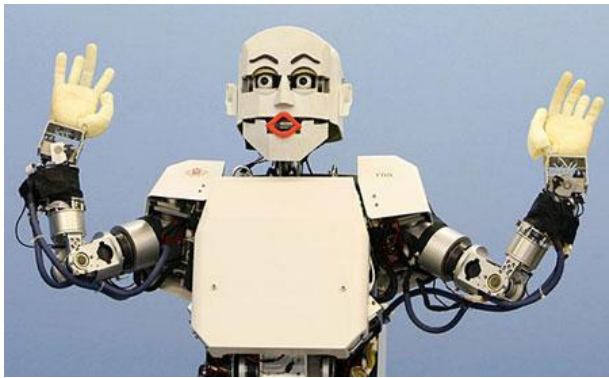
Emotions

Editor-in-chief

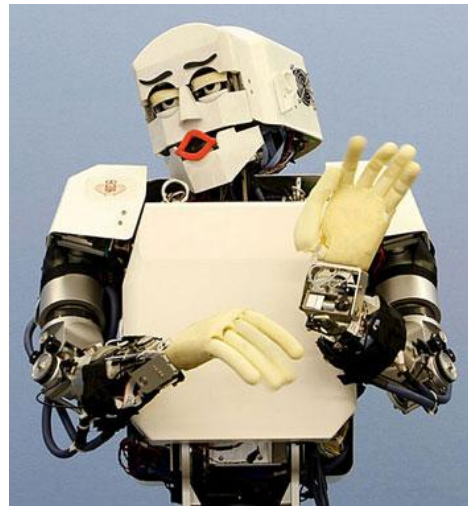
Recently on the news was an item that showed a humanoid robot, named KOBIAN, displaying emotional expressions during a demonstration at Waseda University in Tokyo, Japan. KOBIAN is a walking humanoid robot that is able to use its whole face and body to express emotions. It has been developed by researchers at Waseda's Graduate School of Advanced Science and Engineering, led by Prof. Atsuo Takanashi, and robot manufacturer Tmsuk, based in Kitakyushu, southern Japan.

It is able to express a range of different emotions, including happiness, fear, surprise, sadness, anger and disgust, by opening and closing its eyes, moving its lips and eyebrows, and using its arms and legs. The robot is installed with 48 "actuators" which allow its face and body to move in a variety of ways. Takanashi believes KOBIAN is the first robot able to express emotion with its entire body. He said the ability to express feeling was an "important factor" in achieving "natural communication" between robots and humans.

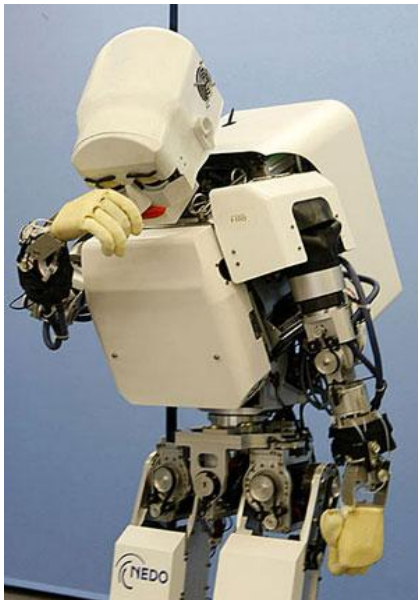
Judge for yourself!



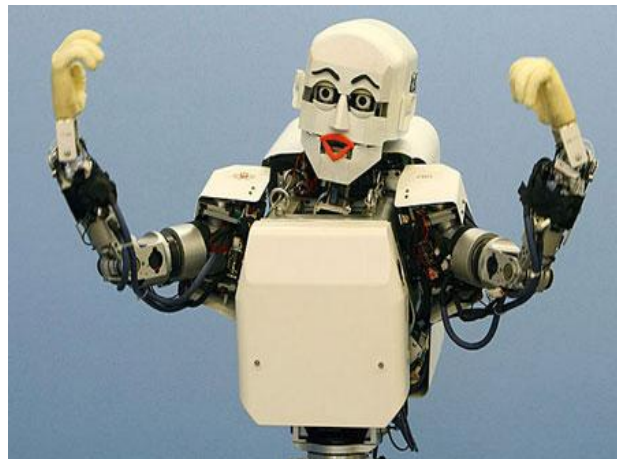
KOBIAN being surprised.



A disgusted KOBIAN.



How sad KOBIAN can be ...



... and how happy!

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The photographs on p. 26 are by chinanews.com, the photograph on p. 29 (upper) is by courtesy of Davide Grossi, the other photographs are by courtesy of TiCC.

Front cover: Can computers recognize art? See report on the symposium “Computers and Art” on pp. 30-32.

The deadline for the next issue is: **June 15, 2009.**

BNVKI-Board News

Antal van den Bosch

Deadlines are our friends – who has invented this phrase? It is blatantly true to many of us researchers, who in the end listen to no one except deadlines. To call deadlines friends may be slightly euphemistic, though; many of us experience a love-and-hate relation with them, but after all that is how deep friendships sometimes play out. Currently, the BNAIC deadline is many people's friend as it has shown its flexibility; it has been extended for a week. When you read this, the programme committee is warming up to review the hopefully many submissions that reached the organizers and program chairs of BNAIC-2009, Karl Tuyls and Toon Calders. We wish them good luck with the content part of the organization.

Other than the BNAIC deadline, the approaching summer causes somewhat of a lull in activities all around, save for travelling plans. The summer conferences are coming up. At one of them, IJCAI-2009, a meeting will be held of the loosely organized International AI Associations group, the highest-level organization that BNVKI is associated with. More close to home, we (representing the Benelux) are of course a long-standing daughter member of ECCAI, the European Coordinating Committee on AI. The world-wide umbrella that meets at IJCAI is currently not more than a bi-yearly meeting, a website and a mailing list to local AI associations. The website is designed as a low-key hub to AI laboratories and educational programmes. You are invited to visit the website (see below for the URL) and suggest some edits to the website editor, if your particular programme or research group is not referenced, so that the resource is improved and AI in our three countries is visible as it should be.

Enjoy your summer!

IAI: <http://www.aiinternational.org/>

ECCAI: <http://www.eccai.org/>

Games, Argumentation, and Logic Programming

Davide Grossi

*Institute of Logic, Language and Computation
University of Amsterdam*

The GALP symposium held by the Individual and Collective Reasoning Group (ICS) of the University of Luxembourg on April 23-24, 2009 has brought

together, for two days, a number of distinguished researchers who are contributing and have contributed to interdisciplinary research at the interface of the disciplines of games, argumentation and logic (with particular focus on logic programming). The aim of the symposium was to foster the interaction between the aforementioned research areas along the lines already present in the seminal contribution of Dung (“On the Acceptability of Arguments and Its Fundamental Role in Non-Monotonic Reasoning, Logic Programming, and N-Persons Games”, *Artificial Intelligence*, 1995). While this contribution has laid the foundations of argumentation theory as a mathematical discipline, sparking a rich and lively research area within Artificial Intelligence, its interaction with Game Theory and Logic Programming has been relatively neglected. The symposium has filled this gap by highlighting a number of recent scientific developments as well as stimulating future research directions.

The talks presented can be grouped according to four focus points: talks concerning argumentation theory in general; and talks focusing on the three overlapping areas of games and logic (programming), games and argumentation, argumentation and logic.

ARGUMENTATION

Dr. Martin Caminada (University of Luxembourg) has provided a thorough introduction to argumentation theory presenting novel results concerning, in particular, algorithmic aspects of argumentation theory and dialogue games. The implementation of the algorithms introduced by Dr. Caminada has then been presented in a comprehensive demo by Patrizio Barbini (Universities of Turin and Luxembourg) and Yining Wu (University of Luxembourg). Finally, Prof. Gerhard Brewka (University of Leipzig) has proposed a multi-agent framework for argumentation generalizing Dung's setting to cover the interaction of different argumentative contexts.

GAMES AND LOGIC

The contribution of Prof. Juergen Dix (Technical University of Clausthal) concerned the use of logic as a formal language for talking about games. It illustrated a number of systematic extensions of ATL – focusing in particular on their complexity – able to capture several game-theoretic concepts, from the typical “power-view” of games based on effectivity functions, to the full-fledged characterization of equilibrium concepts such as the Nash equilibrium. Along a similar line, Dr. Marina de Vos (University of Bath) has shown how Answer Set Programming can be successfully used to encode games and, consequently, compute their

Nash equilibria. Then, somehow closing the circle, she has shown how the solutions of answer set programs can be seen as the product of playing winning strategies in appropriately designed logic games.

ARGUMENTATION AND GAMES

This was definitely the richest section in the symposium. Its talks focused on two main aspects: 1) the game-theoretic proof theory of argumentation based on the so-called dialogue or discussion games; 2) the application of argumentation theory to strategic situations in rational interaction, such as dispute resolution.

In the first group, Dr. Sanjay Modgil (King's College London) has introduced dialogue games for an extension of argumentation frameworks incorporating, besides the standard attack relation between arguments, an attack relation from arguments to attack relations. Prof. Henry Prakken (Universities of Utrecht and Groningen) emphasized the procedural and goal-driven aspects of dialogue games, besides their logical and argumentation-theoretic nature, which still await a full-fledged formal analysis.

As to the second group, Serena Villata has proposed an argumentation-theoretic approach to study the dynamics of coalition-formation in multi-agent systems. Finally, professor P.M. Dung (Asian Institute of Technology) has introduced a novel argumentation-theoretic perspective to dispute resolution based on a form of mechanism design for dialogue games. According to this perspective dialogue games are viewed as procedures for dispute resolution where all arguments defensible via the procedure are also admissible (soundness) and, vice versa, all admissible arguments are defensible via the procedure (completeness).

ARGUMENTATION AND LOGIC

The symposium hosted two talks which bridged argumentation theory with modal logic. The first one, by Prof. Dov Gabbay (King's College London) applied Provability Logic to characterize the content of an argumentation framework as a modal formula whose models naturally correspond to the possible complete extensions of the framework. The second one, by Dr. Davide Grossi (University of Amsterdam) has systematically investigated the simple idea of viewing Dung's argumentation frameworks as Kripke models. The talk has shown how such perspective opens up the possibility of importing techniques (e.g., calculi, evaluation games) and results (e.g., complexity of model-checking) from modal logic to argumentation theory.

All in all, the symposium has beautifully shown how rich the overlaps are between game theory, argumentation theory and logic, and how promising future research lines can be in further investigating such overlaps. For the abstract of the talks, as well as the slides, see the program page at <http://eqas.gforge.uni.lu/Galp/program.html>.



GALP participants posing for the photographer.

Symposium and Inaugural Address Jaap van den Herik and Eric Postma

*Sander Bakkes¹, Jeroen Janssens¹, Wilco Moerman¹,
and Ruud van Stiphout^{1,2}*
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On March 27, Jaap van den Herik and Eric Postma gave their inaugural address at the Tilburg University as professors in Computer Science and Artificial Intelligence, respectively. Their joint inaugural address was titled "Geloof in Computers", which can be translated into both "Belief in Computers" and "Believe in Computers".



The "fresh" professors, Postma (left) and Van den Herik.

INAUGURAL ADDRESS

At the beginning of the Address, Van den Herik announced that March 27 is also the official starting date of the Tilburg centre for Creative Computing (TiCC). This new research centre is part of the Department of Communication and Information Sciences of Tilburg University.

The research within TiCC deals with artificial intelligence, cognitive models (perception and language processing), human-computer interaction, games and serious gaming. The research currently conducted at TiCC already covers these themes very well. Four examples of ongoing research at TiCC on the aforementioned domains are: (1) face recognition, (2) automatic text translation, (3) persuasive emotion-aware user interfaces, and (4) predicting personality traits from gaming behaviour.

Tilburg University initiated the new centre for three main reasons: (1) to strengthen the research within humanities on the subjects of language, vision, and games, (2) to reinforce the new domain of computational humanities, and (3) to achieve a leading position in the international e-Humanities research.

Together with eight other professors (i.e., Antal van den Bosch, Harry Bunt, Myriam Diocaretz, Emiel Krahmer, Fons Maes, Gerard van Oortmerssen, Marc Swerts, and Jan van Zanten) TiCC is committed to deliver ten Ph.D. defences per year, to gather one million Euro per year from the second and third flow-of-funding and to develop a successful Artificial Intelligence and Humanities Bachelor and Master educational program. Van den Herik announced that for the first six months of their appointment the achievements are already in agreement with the commitments.

To indicate what the future will bring us, Van den Herik made some predictions on the development of artificial intelligence. Within five years there will be broadly accepted alternatives for the computer screen and keyboard. The ways in which we interact with computers will change considerably. On the longer term, computers will become increasingly better at understanding verbal and non-verbal human behaviour, thereby facilitating the human-computer communication. For the more distant future, the year 2035, Van den Herik predicts that chess will be solved and around the year 2080 computers will be able to incorporate ethical motives when making legal decisions.

Postma followed up on these predictions by stating that in the near future, the computer will be a friendly companion, rather than a cold grey box. Its appearance will be more human-like; it could, for

example, be a computer-generated face such as Dreamwork's *Shrek*. The friendly computer will adapt itself to the user and is able to recognize non-verbal (and ultimately verbal) expressions.

All these predictions raise the question: what is the fate of artificial intelligence? When will computers be so sophisticated that they will be able to believe themselves? Of course, it is uncertain if this will happen, and if it does, when it will happen. From the inaugural address one thing becomes certain: both Van den Herik and Postma believe in computers.

SYMPOSIUM COMPUTERS AND ART

The inaugural address was accompanied by a symposium about computers and art that took place earlier that day. With the symposium, the Tilburg centre from Creative Computing celebrated its establishment. It was sponsored by NWO, SIKS, and the Faculty of Humanities of Tilburg University.

Computer recognition and analysis of images is steadily improving. To what extent can computers support art historians in their visual examination of paintings? The symposium Computers and Art addressed this question by presenting an overview of art-historian research and by demonstrating the possibilities and limitations of computer-based analysis techniques.

- *A bird-eye's view: Van Gogh's oeuvre and discussions about authenticity*, **Louis van Tilborgh**

The first speaker of the symposium, Louis van Tilborgh, from the Van Gogh Museum in Amsterdam, gave an excellent bird-eye's view on the oeuvre of Van Gogh. In addition, he discussed in depth the challenges that are faced by art experts in establishing the authenticity of an artist's work. The discussed challenges, to a certain extent, can be tackled by techniques such as the visual examination of the brush strokes and the manual counting of the threads of the canvas. Louis van Tilborgh expressed the hope that the Tilburg centre for Creative Computing will continue to develop techniques that can support art experts in their analyses.



Louis van Tilborgh.

- *The comparison of painted illusions (Rembrandt and his pupils), Ernst van de Wetering*

Professor Ernst van de Wetering, leader of the Rembrandt Research Project, demonstrated his expertise in the field of art history by outlining in great detail the challenge of determining a painting's authenticity. Particularly, he focused on paintings that were produced by the students of Rembrandt and other artists. Van de Wetering argued that, although these so-called study-painting may be similar in terms of brush strokes and canvas used, the underlying style of the paintings differ significantly. Van de Wetering challenged computer researchers to capture these stylistic aspects of painting analysis.



Ernst van de Wetering.

- *Mathematical analysis of visual art, Ingrid Daubechies*

Professor Ingrid Daubechies, from Princeton University, is an internationally recognized expert in the field of signal analysis. She is most famous for her work in the domain of wavelets, most notably for the so-called "Daubechies wavelet". Daubechies gave a very clear explanation of her method for the digital analysis of paintings. Her wavelet-based method extracts features of digital reproductions of paintings by blurring, yielding representations at different scales. Subsequently, the numerical differences between adjacent scales are examined. The differences indicate important features such as the fine or coarse brushstrokes painted by Van Gogh. By combining this method with machine-learning algorithms it is possible to separate some real Van Gogh paintings from fake ones.



Ingrid Daubechies.

- *Computer assisted studies of Van Gogh's canvas weaves, Ella Hendriks*

The next presentation was given by Ella Hendriks, who is an art expert working at the Van Gogh Museum. According to Hendriks, close examination of the canvas can reveal new information about the creation date (and possibly authenticity) of a painting. Canvas is weaved on machines with their own particularities and the distances between threads depend on the type of machine. To determine the creation date of a painting, thread counts are compared with others from the same painter. If they differ, it is probable that the painting was not painted at the same time as the known paintings, because painters often use a single large piece of canvas and only order a new one when the old one is used. A research team headed by Professor Rick Johnson (Cornell University) developed automatic thread-counting software to support art historians in determining the thread count for a (part of the) canvas.



Ella Hendriks.

Hendriks demonstrated the results of a comparison between the manual counting and the automatic counting of threads. The computer proved to be at least as reliable as the human counter. One big advantage of computer-based thread counting is that the computer can count fast, allowing a "weave map" of counts from the entire painting, whereas art historians count much slower and only count on a few dozen small regions. The computer-generated

thread maps allow for a better comparison of paintings, and already yielded interesting results: a known Van Gogh could be dated to a specific time, because its weave map fitted that of two other known and dated paintings.

- *How language shapes what we see*, **Emiel Krahmer**

Professor Emiel Krahmer (Tilburg University) gave a presentation in which he addressed the influence of language on the perception of art. He started his presentation by referring to the well-known, but incorrect, story about the Eskimos who have dozens of words for “snow”. Philosophers have wondered how language and thought interact: does language shape how we think? Krahmer presented results of his experiments showing at least a partial influence of language on perception. People were first given a simple task like finding words in a square full of letters. The words were either abstract (e.g., “democracy” and “love”) or more concrete (e.g., “table” and “computer”). After this, they were presented with three dots that were arranged in a triangle and then were given two other pictures and had to decide which picture was most similar to the first one. Interestingly, individuals who got the abstract words were more prone to choose three squares forming a triangle, whereas the individuals that got the practical words preferred the four circles arranged in a square. Those who had been presented with more abstract terms preferred the more general view (a large triangle formed by smaller objects), but the other group selected local features (four round dots) significantly more often. As a closing thought, Krahmer raised the question whether the influence of language on perception could also be at work in paintings. It is known that in western (realistic) paintings the perspective is generated in terms of the details: the perspective can be deduced from the depicted objects. Far-eastern paintings on the other hand have no local perspective but they do have a sense of depth on a more global level (like paintings of misty mountains in the distance). The question was raised whether this difference might be related to the difference in world view between east and west.

- *Computers and Japanese art*, **Hiroyuki Iida**

Professor Hiroyuki Iida (Japan Advanced Institute of Science and Technology) is specialized in board games and the concept of art to games. Taking the game of Othello as an example, he stated that both searching through a solution space to an end-state of the game, as well as reasoning back from an end-state to an initial state using artificial intelligence, is in a way a form of art. He illustrated the statement by reviewing works and methods of famous Japanese painters.



Hiroyuki Iida.

- *Van Gogh's belief in nature*, **Chris Stolwijk**

The final speaker of the symposium was Chris Stolwijk (head of research of the Van Gogh Museum). Stolwijk presented a philosophical perspective on Van Gogh's oeuvre. He reviewed several paintings that exemplify the importance of nature and the role it played in Van Gogh's work. His presentation on Van Gogh's belief in nature was an excellent introduction to the inaugural address of Van den Herik and Postma.



Chris Stolwijk.

Report on Benelearn 2009

Sophia Katrenko
Human Computer Studies Laboratory
Universiteit van Amsterdam

The 18th Annual Belgian-Dutch Conference on Machine Learning (Benelearn) took place on May 18-19, 2009 in Tilburg, the Netherlands. The conference attracted 49 participants, not only from Belgium and the Netherlands but also from 6 other countries, such as France, the United Kingdom, Germany, Turkey, Italy and Finland. The program spanned two days and included 2 invited talks, 11 regular presentations, and 14 speed talks with posters.

After the opening by the organizers, the first day started with the invited talk by Steffen Pauws from Philips Research Europe. His presentation covered various aspects of machine learning and highlighted how it can be used in the applied setting of recommendation systems, information extraction, and emotion detection.

The first session was opened by a talk on recognizing monument names from text (Hans Pajmans and Alex Brandsen). The speakers showed that, despite the progress in named-entity recognition in general, this task remains challenging when considered in the new domain.

Learning, and more precisely meta-induction, was discussed from the philosophical point of view by Gerhard Schurz (University of Duesseldorf, Germany). As argued by the speaker, meta-induction can be applied to the evolution of cognition whereby an individual's learning strategies are considered as inductive and those that are determined genetically are non-inductive. Meta-induction is considered then (within one population) as learning from performance of other individuals.

The second session featured research conducted by Tapio Pahikkala and colleagues (and presented by Willem Waegeman from Ghent University) on learning intransitive reciprocal relations. To tackle the above-mentioned problem, they presented a novel method by formulating a kernel function that defines the transition from transitive to intransitive models. In addition, this approach has been evaluated on the benchmark data used in game theory.

Ayhan Demiriz from Sakarya University (Turkey) gave a talk on the Traveling Salesman Problem during which he argued that it can be solved by a ranking approach. In particular, by ranking nodes in network problems, it becomes possible to shrink search space and to reduce information complexity.

Language acquisition was discussed by the next speaker, Xuchen Yao from the University of Groningen. In his talk he focused on a categorical grammar learner and demonstrated that it can be successfully used to simulate language acquisition.

Deterministic finite automata (DFA) have been used for many tasks in the past, yet there are other domains that can benefit from employing them. This was shown by Wico Mulder from the University of Amsterdam who proposed to consider collaborative DFA learning in the context of grid computing.

The first day ended with a visit to the city hall and a wonderful dinner in the centre of Tilburg. During the dinner the participants had an opportunity to discuss various topics in a relaxed atmosphere.

On the next day, the conference continued with a presentation on local SVM by Nicola Segata and Enrico Blanzieri from Italy. This work was inspired by the advantages of two methods, namely support vector machines and k-nearest neighbor classifiers. The authors showed that one can combine them into one classifier by searching for the largest margin on the neighborhood of a data sample in the feature space induced by a kernel function.

Jeroen H.M. Janssens and Eric O. Postma presented their work on comparing two density-based outlier-detection methods, LOF and LOCI. Even though LOCI was often considered superior over LOF, the authors' findings suggest that this does not generally hold.

The second invited speaker at the conference was Khalil Sima'an from the University of Amsterdam who presented his research in the area of parsing and machine translation. In particular, he focused on the problem of statistical estimation by discussing shortcomings of the known estimators and presenting the way of defining consistent estimators for the data-oriented parsing model.

Speed talks were presented in the afternoon. Once the participants became familiar with the research conducted by presenters, they could approach them during the poster session and discuss it in depth. Similarly to the regular talks, the topics covered by posters were very diverse, from more theoretically oriented ones, such as tracking experts (Wouter M. Koolen and Tim van Erven) and identification of the subtypes of graph grammars (Christophe C. Florencio), to more applied ones, such as exploring how concepts vanish over time (Gabriela Pavel), learning probabilistic relational models in the domain of card games (Laura Antanas et al.), and many others.

The talks in the afternoon ranged from applying machine-learning techniques to keystroke analysis (Martin Lopatka and Maria-Hendrike Peetz), to modeling ship trajectories (Gerben de Vries and Maarten van Someren). Laurens van der Maaten from Tilburg University presented his work on extending the Gaussian process latent variable models (GPLVM). The motivation for the extension was to preserve not only the global data structure in the latent space, but also the local one. This can be achieved by introducing a prior distribution on the GPLVM parameters. The experimental findings on

various data sets are very encouraging and show that this method yields better data models.

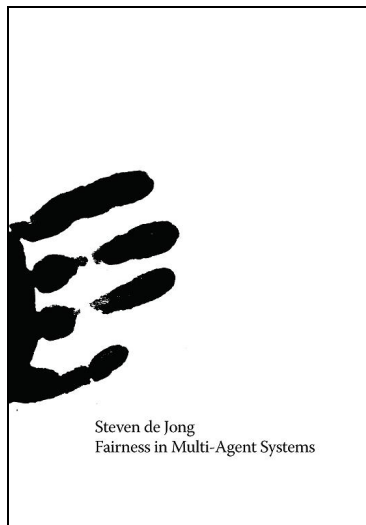
To sum up, once again Benelearn provided a great opportunity for the researchers in the field of machine learning to present their current work and exchange ideas. It is worth mentioning that the talks were given not only by senior researchers but also by recently graduated students. For some of them Benelearn became a conference where they presented their scientific work for the first time. Topic-wise, the conference featured work on extensions of different popular machine-learning methods but also covered many application areas. I would like to thank the organizers Menno van Zaanen, Marieke van Erp, and Herman Stehouwer for making Benelearn 2009 such a success.

PH.D. THESIS ABSTRACTS

Fairness in Multi-Agent Systems

Ph.D. thesis abstract
Steven de Jong

Promotors: Prof.dr. H.J. van den Herik, Prof.dr. E.O. Postma
Co-promotor: Dr. K. Tuyls
Date of defense: June 4, 2009



Within the field of artificial intelligence, the research area of multi-agent systems investigates

societies of autonomous entities, called *agents*, that need to cooperate or compete in order to achieve a certain goal (Jennings et al., 1998; Shoham et al., 2007). Humans may be part of these societies. Example applications include resource distribution, auctions, and load balancing. In many of these applications, we observe elements of so-called *social dilemmas*, in which taking into account fairness and social welfare is necessary. In some dilemmas, humans are known to care strongly for fairness and social welfare; in others, caring for fairness and social welfare is essential for agents to achieve a satisfactory solution.

In this thesis, we show how agents may be stimulated to care for the fairness of their actions. The human-inspired mechanisms of altruistic punishment and withholding action are central to our approach. Chapter 1 therefore presents the following problem statement.

PS *How can we obtain human-inspired fairness in multi-agent systems?*

The remainder of Chapter 1 provides an overview of five research questions resulting from this problem statement. These questions are given below.

RQ1 *How are humans using fairness in their decisions?*

RQ2 *What are the foundations of human-inspired computational fairness?*

RQ3 *How can human-inspired fairness be modeled computationally, taking into account the foundations of human fairness?*

RQ4 *What are the analytical properties of the computational human-inspired fairness models developed in this research?*

RQ5 *What are the (empirical) benefits of incorporating explicitly human-inspired fairness in adaptive multi-agent systems?*

Thereafter, Chapter 1 discusses the research methodology followed. Next, in Chapter 2, we review the fundamental background knowledge required for research in multi-agent systems in general, i.e., game theory and multi-agent reinforcement learning. Chapter 2 also elaborately explains the social dilemmas we investigate throughout the thesis, i.e., the *Ultimatum Game*, the *Nash Bargaining Game*, and the *Public Goods Game*.

The five research questions are addressed in Chapters 3 to 6. RQ2 is addressed before the other

four research questions, i.e., in Chapter 3. Essentially, we there present two foundations, i.e., (1) a set of three *requirements* that need to be met by human-inspired computational fairness models, and (2) a *template model* based on these requirements. We require that any computational model should be (R1) rooted in a game-theoretic background (as game theory is a well-established manner of describing interactions between multiple agents), (R2) computationally applicable in an adaptive multi-agent system (i.e., we require tractable solution concepts), as well as (R3) inspired by humans. With respect to the last requirement, we state that agents must be able to answer three questions, i.e., (R3-Q1) to what extent an interaction is fair, (R3-Q2) whether one or more of their peers need(s) to be punished, and (R3-Q3) whether it is desirable to withhold action, i.e., not to participate in a certain interaction. We present a template model, based on the well-known concept of a utility function, and show how this model may be instantiated in such a way that our requirements are met.

The following three chapters, i.e., Chapters 4 to 6, form the core of the thesis, and follow a similar structure. In each chapter, we discuss a specific computational model of human-inspired fairness, based on the foundations presented in Chapter 3. For each model, we address **RQ1** by discussing a specific descriptive model of human fairness. We then create a computational model of fairness, incorporating this specific descriptive model (**RQ3**), analyze the computational model (**RQ4**), and use the model in an adaptive multi-agent system that is learning to find good solutions to social dilemmas (**RQ5**).

Chapter 4 presents a computational model based on a descriptive model of *inequity aversion*, as developed by Fehr and Schmidt (1999). Inequity aversion entails that human decisions are influenced by differences in observed rewards. The descriptive model of Fehr and Schmidt (1999) is able to explain a great deal of (irrational) human decisions in interactions where limited resources need to be shared. Even though this is the case, the model has not yet convincingly found its way into multi-agent systems. We address this issue by developing a computational model of fairness, based on inequity aversion. We show that our computational model allows (a small number of) agents to reach satisfactory, human-inspired solutions to the social dilemmas under study.

In Chapter 5, we discuss that human behavior is not only influenced by (differences in) observed rewards, but also by additional information humans may have or gather about the others participating in

an interaction. Existing research proposes reputation-based approaches to model this phenomenon. We argue that an important element is missing from reputation-based models, i.e., that there may be additional information that is immediately present, e.g., bargaining powers, stereotypes, or priorities. We present a descriptive model named *priority awareness* to address both additional information that is immediately present, as well as reputation. In an approach similar to that of Chapter 4, we show how a computational model of fairness may be based on priority awareness, and how this influences outcomes to interactions between agents.

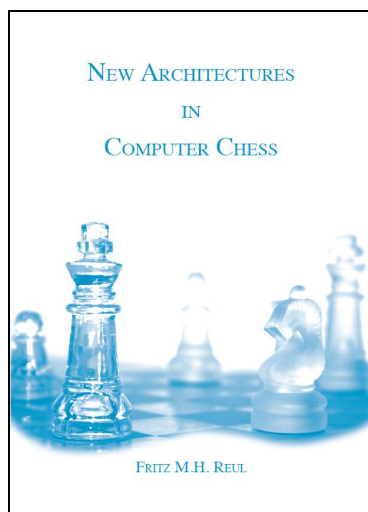
In Chapter 6, we increase the scale of our work from at most a few dozen to a few thousand agents. In the last ten years, a great deal of research has been devoted to *social networks*, which have been shown to have a decisive impact on the manner in which humans (as well as artificial agents) change their behavior as a result of interactions with others, based on neighbor relations in a certain network structure. Existing work examining how networked agents change their behavior in social-dilemma-like interactions has thus far been limited to social dilemmas with only a discrete, small number of possible actions (e.g., two). Since we are interested in addressing more realistic social dilemmas, we investigate how network structure influences agents' behavior in social dilemmas with a continuum of actions. We show that a number of mechanisms promoting desirable behavior in discrete dilemmas also work in continuous dilemmas (i.e., most prominently the possibility of agents to withhold action by breaking the link between them and an undesirable neighbor), while a number of other mechanisms do not provide additional benefits (e.g., reputation).

We conclude in Chapter 7 by answering our research questions, summarizing our findings, answering the problem statement, and looking at opportunities for future work. We show that human-inspired fairness in multi-agent systems may be obtained by means of a four-step process, i.e., (1) experiments with human subjects, (2) modeling human fairness in descriptive models, (3) establishing the foundations of computational models of human-inspired fairness, and (4) translating descriptive models to computational models respecting the foundations. Using the three computational models presented in this thesis, we may conclude that agents are able to find desirable solutions to social dilemmas, even in the presence of agents that do not care about fairness and try to undermine a desirable, fair solution.

New Architectures in Computer Chess

Ph.D. thesis abstract
Fritz Reul

Promotor: Prof.dr. H.J. van den Herik
Co-promotor: Dr. J.W.H.M. Uiterwijk
Date of defense: June 17, 2009



The thesis investigates the most important requirements, objectives, rules, and theories for the development of state-of-the-art computer-chess architectures. For this task we focus on the question how to develop new computer-chess architectures that make it possible to implement complex chess knowledge leading to a higher overall performance by a higher computing speed. Furthermore, the implemented data structures should be straightforward and compact in order to minimise unnecessary overhead.

The computer-chess architectures and the corresponding algorithms should perform on different hardware and software environments. The following problem statement guides our research.

Problem statement: *How can we develop new computer-chess architectures in such a way that computer-chess engines combine the requirements on knowledge expressiveness with a maximum of efficiency?*

To answer the problem statement we formulated three research questions. They deal with (1) the development and analysis of a non-bitboard computer-chess architecture, (2) the development and analysis of a computer-chess architecture based on magic multiplication, and (3) the development

and analysis of a static exchange evaluator (SEE) with $\alpha\beta$ -approach. A precise formulation is given later in this summary.

Chapter 1 is a general introduction of computer-chess architectures. Our problem statement and the three research questions are formulated. Every research question is discussed and answered in an own chapter. In turn they seek to answer the problem statement.

Chapter 2 describes the development of a non-bitboard computer-chess architecture which is carried out on an R&D basis of the computer-chess engines LOOP LEIDEN 2006 and LOOP EXPRESS. One of the objectives of the new computer-chess architecture is a strong and homogeneous data structure that can also be used in the environment of a multi-core computer-chess engine. Therefore, we imposed three criteria on the used data structures, which are (1) competitiveness in speed, (2) simplicity, and (3) ease of implementation. This challenge has led us to the first research question.

Research question 1: *To what extent can we develop non-bitboard computer-chess architectures, which are competitive in speed, simplicity, and ease of implementation?*

Although based on the experiences gained during the development of the LOOP computer-chess β -engines 2005-2006, the 32-bit computer-chess architecture for LOOP LEIDEN was written from scratch. We focus on the development of the chessboard and the management of chessboard-related information. Only if these new developments are in a harmonious interplay, a high-performance framework for the highest requirements on a computer-chess engine can be implemented.

These technologies have proven their performance within the computer-chess engine LOOP LEIDEN at the 26th Open Dutch Computer-Chess Championship, Leiden (NL) 2006. The engine was able to reach the 2nd place. Furthermore, this non-bitboard computer-chess architecture has been used in two external projects, the Chess Machine HYDRA and Nintendo Wii Chess, since 2006.

Chapter 3 focuses on the development of a complete computer-chess architecture based on hash functions and magic multiplications for the examination of bitboards. This has led us to the second research question.

Research question 2: *To what extent is it possible to use hash functions and magic*

multiplications in order to examine bitboards in computer chess?

In this chapter the basics of the magic hash approach and the magic hash functions are examined. In order to answer the second research question, an advanced version of our computer-chess architecture so far must be developed. The implementation of this computer-chess architecture is based on a perfect mapping function and on 64-bit unsigned integers (bitboards).

For the development of a well performing magic hash algorithm, only basic arithmetic and Boolean operations are used. Two main objectives of this chapter are the indication of (1) arbitrary n -bit unsigned integers, such as multiple 1-bit computer words, and (2) compound bit-patterns via hash functions. Only in this way it is possible to develop (1) a challenging bit scan and (2) the movement of sliding pieces without computing redundant rotated bitboards.

The new computer-chess architecture is implemented in the computer-chess engine LOOP AMSTERDAM. This engine was able to reach the 3rd place at the 15th World Computer-Chess Championship, Amsterdam (NL) 2007. An essential reason for the success of this 64-bit computer-chess engine was the use of highly sophisticated perfect hash functions and magic multipliers for the computation of compound bit-patterns (bitboards) via perfect hashing.

Chapter 4 deals with the R&D of a straightforward and more efficient static exchange evaluator (SEE) for the computer-chess engine LOOP AMSTERDAM.

The SEE is an important module of the computer-chess architecture for the evaluation of moves and threatened squares. When using an $\alpha\beta$ -window it is possible to implement efficient pruning conditions. The benefit of the pruning conditions is the reduction of an iterative computation. The third research question deals with the theoretical elements and the implementation of different SEE-algorithms.

Research question 3: *How can we develop an $\alpha\beta$ -approach in order to implement pruning conditions in the domain of static exchange evaluation?*

The development of an SEE is a challenging issue. After the introduction of the SEE algorithm, recursive and iterative implementations are examined. An $\alpha\beta$ -window to control the evaluation is introduced on the basis of an iterative approach.

Due to the new architecture of the algorithm, the implementation of pruning conditions is possible.

Some typical applications of the SEE in the field of a computer-chess engine are introduced. The applications range from move ordering and move selection to the control of search extensions and to the evaluation of passed-pawn structures. Due to the variety of possible applications of the SEE, it is interesting to scrutinize the complex algorithm and the extensive possibilities of an implementation within a state-of-the-art computer-chess architecture.

The last chapter of the thesis contains the research conclusions and recommendations for future research. Taking the answers to the three research questions into account, we are able to give an answer to our problem statement. All implementations were tested in the environment of the state-of-the-art computer-chess engines LOOP LEIDEN 2006 and LOOP AMSTERDAM 2007. So, every idea and technology is tested and evaluated in a competitive computer-chess engine.

The Way to e-Humanities is Full of Words

*Jaap van den Herik
TiCC, Tilburg University*

Over the years I have been an ardent advocate of short titles. Communication should be brief, accurate, and focussed. So, all readers know my preference for titles of at most five words. This holds for Ph.D. theses as well as for titles of articles. For the current list, Peter Massuthe, André de Vries, and Stijn Vanderlooy are clear winners. A very good job has been done by Steven de Jong (say 4.5 words), Fritz Reul, and Laurens van der Maaten. Being a long-time editor to this BNVKI Newsletter I know the counterarguments, in particular the argument that it is impossible to cover the contents adequately by a short title.

Whether this is true or not (I do not believe the argument), it is interesting to see what is going on in our community. The cooperation with AI and Medicine results in longer titles (Alas). However, the new extension to Artificial Intelligence, i.e., AI and the Humanities, seems to have a different perspective. Following the current atmosphere, we will call the new branch e-Humanities (and here we may point the reader in passing to the new initiative of CLARIN). A new representative of e-Humanities is Dr. Cees Mandemakers. For many years now he is affiliated to the *Internationaal Instituut voor Sociale*

Geschiedenis (IISG) in Amsterdam. Recently he has been appointed to a professorship of a special chair at the EUR. The BNVKI board is delighted that Mandemakers – being also a new contributing member of the CATCH community – will accept the dignity by means of an inaugural address. Thus, we have included the announcement in the corresponding list below. Owing to its length, this is not the place to repeat the title, but we are sure it will be an interesting lecture. From my own experience with him, I know that Cees Mandemaker is an amicable person, who is interested in our world of five words only. I look forward to the Ph.D. titles of his students. My editorial message to him reads: “Cees, the AI branch of the humanities cover three concepts: ‘mobility’, ‘learning’ and ‘adaptation’. I look forward to your substitution of these three concepts”. The Editorial Board wholeheartedly congratulates all Ph.D. students, and the new-born professors Cees Mandemakers, Wessel Kraaij, and Gerard van Oortmerssen.

Ronald Poppe (April 2, 2009). *Discriminative Vision-Based Recovery and Recognition of Human Motion*. Universiteit Twente. Promotor: Prof.dr.ir. A. Nijholt (UT). Co-promotor: Dr. M. Poel (UT).

Volkert Nannen (April 16, 2009). *Evolutionary Agent-Based Policy Analysis in Dynamic Environments*. Vrije Universiteit Amsterdam. Prof.dr. J.C.J.M. van den Bergh (VU) and Prof.dr. A.E. Eiben (VU).

Peter Massuthe (April, 21, 2009). *Operating Guidelines for Services*. Technische Universiteit Eindhoven. Promotores: Prof.dr. K.M. van Hee (TU/e) and Prof.dr. W. Reisig (HU-Berlin). Co-promotor: Prof.dr. K. Wolf (Uni-Bremen).

Sietse Jan Overbeek (April 24, 2009). *Bridging Supply and Demand for Knowledge Intensive Tasks – Based on Knowledge, Cognition, and Quality*. Radboud Universiteit Nijmegen. Promotor: Prof.dr. H.A. Proper (RUN).

Rick Goud (May 8, 2009). *Computerized Decision Support to Improve Guideline Implementation in Cardiac Rehabilitation*. Universiteit van Amsterdam. Promotor: Prof.dr.ir. A. Hasman (UvA). Co-promotores: Dr. N.B. Peek and Dr. N.F. de Keizer.

Saied Eslami (May 15, 2009). *Pharmacotherapy and Patient Safety in Intensive Care: Impact of guideline-based decision support*. Universiteit van Amsterdam. Promotores: Prof.dr.ir. A. Hasman and Prof.dr. E. de Jonge. Co-promotores: Dr. A. Abu-Hanna and Dr. N.F. de Keizer.

Miranda Tromp (May 20, 2009). *Record Linkage to Enhance Data from Perinatal Registries*. Universiteit van Amsterdam. Promotores: Prof.dr. G.J. Bonsel and Prof.dr.ir. A. Hasman. Co-promotores: Dr. A.C.J. Ravelli and Dr. J.B. Reitsma.

André de Vries (June 3, 2009). *The Value of Haplotypes*. Rijksuniversiteit Groningen. Promotor: Prof.dr. R.M.W. Hofstra (RUG).

Steven de Jong (June 4, 2009). *Fairness in Multi-Agent Systems*. Universiteit Maastricht. Promotores: Prof.dr. H.J. van den Herik (UvT) and Prof.dr. E.O. Postma (UvT). Co-promotor: Dr. K. Tuyls (TU/e).

Jan Wielemaker (June 12, 2009). *Logic Programming for Knowledge-Intensive Interactive Applications*. Universiteit van Amsterdam. Promotores: Prof.dr. B.J. Wielinga (UVA) and Prof.dr. A. Th. Schreiber (VU).

Fritz Reul (June 17, 2009). *New Architectures for Computer Chess*. Tilburg University. Promotor: Prof.dr. H.J. van den Herik (UvT). Co-promotor: Dr. J.W.H.M. Uiterwijk (UM).

Laurens van der Maaten (June 23, 2009). *Feature Extraction from Visual Data*. Universiteit van Tilburg. Promotores: Prof.dr. E.O. Postma (UvT) and Prof.dr. H.J. van den Herik (UvT). Co-promotor: Dr. A.G. Lange (RACM).

Stijn Vanderlooy (July 1, 2009). *Ranking and Reliable Classification*. Universiteit Maastricht. Promotores: Prof.dr. H.J. van den Herik (UvT), Prof.mr. Th.A. de Roos (UvT), and Prof.dr.rer.nat. E. Hüllermeier (P-U Marburg).

INAUGURAL ADDRESSES

In the next months the following inaugural addresses will take place.

Dr. C.A. Mandemakers (June 11, 2009). *Waarom Jan en Cor met elkaar trouwden. Over grote historische databases, koudwatervrees en interdisciplinaire samenwerking*. Erasmus Universiteit Rotterdam, Aula, 16.00 hours.

Dr.ir. W. Kraaij (June 25, 2009). *Information Filtering and Aggregation*. Radboud University Nijmegen.

Dr.ir. G. van Oortmerssen (September 9, 2009). Title to be announced. Tilburg University, Aula, 16.15 hours.



2nd SIKS/Twente Seminar on Searching and Ranking in Enterprises

On June 24 2009, the 2nd SIKS/Twente Seminar on Searching and Ranking in Enterprises takes place at the University of Twente, Enschede. The goal of the one day workshop is to bring together researchers from companies and academia working on enterprise search problems.

PROGRAM

- 9:30 Coffee and Welcome
- 9:45 *Practical Methods for Evaluating Enterprise Search*, David Hawking, Funnelback Internet and Enterprise Search & Australian National University
- 10:30 *Voting Techniques for Expert Search*, Iadh Ounis, University of Glasgow
- 11:15 *Expert Profiling Out In the Wild*, Maarten de Rijke, University of Amsterdam
- 12:00 Lunch and Closing
- 13:00 *The search for expertise: Beyond direct evidence*, Ph.D. defense of Pavel Serdyukov

For more details: <http://www.cs.utwente.nl/~hiemstra/ssr2009/>

The seminar is sponsored by:

- SIKS: Research School for Information and Knowledge Systems, <http://www.siks.nl>
- WGI: *Werkgemeenschap Informatiewetenschap*, <http://www.informatiewetenschap.org>
- CTIT: Centre for Telematics and Information Technology, <http://www.ctit.utwente.nl>

REGISTRATION

Please send your name and affiliation to ssr@lists.utwente.nl if you plan to participate in the seminar, and help us estimate the required catering.

Symposium “In Search of Privacy”

On June 25, 2009, the Radboud University (Information Foraging Lab) and TNO Information and Communication Technology organise the

symposium “In Search of Privacy” with presentations of speakers from the privacy, data mining and search technology communities. The symposium will conclude with the inaugural lecture of Dr. Wessel Kraaij of TNO Information and Communication Technology as Professor in Information Filtering and Aggregation at the Faculty of Science, Radboud University. Participation is free for all SIKS members.

Five international experts will discuss the economic and societal value of mining and profiling methods and practices, the associated privacy aspects, and new privacy-preserving methods of information gathering. A discussion panel chaired by Anton Vedder (TILT) will provide a forum for further clarification of positions. The keynote speaker at the symposium is Mr. Marc Rotenberg, Executive Director of EPIC, who will give an address on *Behavioural Targeting; The Regulatory and Technological Challenges*.

The symposium “In Search of Privacy” is an initiative of TNO Information and Communication Technology and is supported by Radboud University, SIKS, Safe.NL and Werkgemeenschap Informatiewetenschap.

MORE INFORMATION AND REGISTRATION

There is no registration fee, but participants are requested to register before June 15, 2009 at <http://www.tno.nl/symposiuminsearchofprivacy>.

The symposium will be held at the Radboud University, Huygens building, HG00.304. Address: Heyendaalseweg 135, 6525 AJ Nijmegen.

Agent Summer School for SIKS-Ph.D. Students

From Aug 31 - Sept 4, 2009 the eleventh edition of the European Agent Systems Summer School (EASSS 2008) takes place in Torino, Italy. Details on program and location can be found at <http://agents009.di.unito.it/EASSS.html>. As a result of the cooperation between SIKS and the EASSS 2009 organisation, SIKS will reimburse the entrance-fee for a fixed number of its Ph.D. students.

The summer school is part of the Advanced Components stage of the school’s educational program and therefore Ph.D. students working in the field of (multi-)agent systems are strongly encouraged to participate. A free participation as a SIKS-Ph.D. student is only possible by sending an e-mail to office@siks.nl and inform Mrs. Corine Jolles that you want to participate. Ph.D. students

will receive a notification whether they can participate as soon as possible. For all questions regarding SIKS and its educational program, please contact office@siks.nl.

EASSS'08 will comprise the following courses:

- action selection and planning in multi-/agent systems
- adaptation, evolution and learning in (multi-) agent systems
- agent-based simulation and modeling
- agent communication, agent dialogues and agent argumentation
- agents, ontologies, web services and semantic web
- agent-oriented software engineering and development methodologies
- agent programming languages and development tools
- agent standardizations in industry and commerce
- applications and deployment for agents and multi-agent systems
- architectures for multi-agent systems
- artificial market systems, auctions, trading agents and electronic commerce, electronic institutions
- autonomous robots and robot teams
- believability, human-like qualities of synthetic agents, humanoid and sociable robots
- game theory and coalition formation for agent-based systems
- computational complexity in agent systems
- conventions, commitments, norms, social laws and legal issues in multi-agent systems
- coordination, cooperation, and collaboration in multi-agent systems
- emergence, self-organisation and collective behavior in agent-based systems
- foundational issues and theories of agency
- information agents, routers, brokering and matchmaking
- logics for specification, verification and validation of multi-agent systems
- mobile agents
- negotiation, task and resource allocation, and conflict handling in multi-agent systems
- privacy, safety and security in multi-agent systems
- scalability, robustness and dependability of multi-agent systems
- social and cognitive models for agents
- social and organizational structures of multi-agent systems
- trust and reputation in multi-agent systems

More information can be found at the webpage.

Advanced SIKS Course on “The Semantic Web”

INTRODUCTION

On September 24 and 25, 2009 the School for Information and Knowledge Systems (SIKS) will organize an advanced course on “The Semantic Web”. The course takes two days, will be given in English and is part of the so-called Advanced Components Stage of the Educational Program for SIKS-Ph.D. students. Although these courses are primarily intended for SIKS-Ph.D. students, other participants are not excluded. However, their number of passes will be restricted and depends on the number of students taking the course. The course is given by experienced lecturers actively involved in the research areas related to the topics of the course.

Since the seminal paper on the “Semantic Web” by Tim Berners-Lee, James Handler and Ora Lassila, appeared in *Scientific American* in 2001, a lot of progress has been made. The Semantic Web community has developed a standard language for representing ontologies on the Web (OWL) as well as Semantic Web specific query languages such as SPARQL. Further, there are recent developments which aim at bringing together more closely the Semantic Web with traditional web architecture, e.g. RDFa, POWDER, the open linked data movement, etc.

In this advanced course on Semantic Web we intend to give an overview of recent developments in the field. The first day of the course will cover advances in reasoning, including the new OWL2 standard as well as OWL rules and other extensions to OWL. The second day of the course will deal with other recent developments such as SKOS and RDF-a. On this second day we will also cover the relation of the Semantic Web with the Media Web as well as the “Human Web” which still relies heavily on content expressed by means of natural language. At the end of the second day we will discuss recent and exciting applications of Semantic Technologies in various fields. Especially Ph.D. students working on the SIKS-foci “Web-based Systems”, “Knowledge Representation and Reasoning” and “Data Management, Storage and Retrieval” are strongly encouraged to participate.

LOCATION

Conference center Hotel Mitland in Utrecht.

SCIENTIFIC DIRECTORS

- Dr. Philipp Cimiano(TUD)
- Dr. S. Schlobach (VU)
- Dr. Shenghui Wang(VU)

PROGRAM

The program will be announced in due course.

REGISTRATION

In the conference center there is a limited number of places and there is interest from other groups in the topic as well. Therefore, an early registration is required.

Deadline for registration for SIKS-Ph.D. students: September 1, 2009

After that date, applications to participate will be honoured in a first-come first-serve manner. Of course, applications to participate from other interested groups are welcome already. They will receive a notification whether they can participate as soon as possible.

4th SIKS Conference on Enterprise Information Systems (EIS 2009)

Nijmegen, October 23, 2009

Theme: Return on Modelling Effort

For the fourth time, the Dutch Research School SIKS organizes a Dutch/Belgian Conference on Enterprise Information Systems (EIS). The purpose of EIS is to bring together Dutch/Belgian researchers interested in the advances and business applications of information systems – a broad field, including topics such as Management Information Systems, E-Business, IS Analysis and Design, Requirements Engineering, Business Innovation, Knowledge Management, Business Process Management, Product Software Development, Coordination and Communication, Collaborative Information Systems, Business/IT Alignment, Enterprise Engineering, Architectures for IKS, and many others.

EIS 2009 is organized by SIKS (School for Information and Knowledge Systems) in cooperation with BENAIS (the Benelux Chapter of the Association for Information Systems) and NAF (Netherlands Architecture Forum) and offers a unique opportunity for research groups from both the Computer Science-side and the Management-side to report research, meet and interact. We also welcome practitioners with an interest in research and innovation.

Keynote Speaker will be Prof. dr. Anne Persson of the University of Skövde, Sweden.

IMPORTANT DATES

| | |
|-------------|---|
| August 3 | Submission deadline for category A papers (see below) |
| August 24 | Submission deadline for category B papers |
| September 7 | Notification of acceptance |
| October 23 | EIS 2009, Nijmegen, the Netherlands |

TYPES OF CONTRIBUTION

Type A: REGULAR PAPERS

Papers presenting new original work. Submitted papers should not exceed a length of 10 pages. These papers will be reviewed on overall quality and relevance. All accepted papers will be fully published in the proceedings.

Type B: COMPRESSED CONTRIBUTIONS

Papers that have been accepted after September 2008 for IS-related refereed conferences or journals can be resubmitted and will be accepted as compressed contributions. Authors are invited to submit the officially published version (without page restriction) together with a one or two-page abstract (Please put both files in a single zip file and upload the zip file.). B-Papers will be accepted for either brief oral or poster presentation. An extended abstract of the paper will be published in the proceedings. Every author may submit at most one B-paper of which they are the corresponding author, and only if they do not submit any A-paper as corresponding author.

SUBMISSION DETAILS

Paper submissions must be formatted in the (Proceedings) style of the Springer Publications format for Lecture Notes in Computer Science (LNCS). For complete details, see Springer's Author Instructions. Authors keep the copyright of their submissions. The EIS Proceedings will be digital, and will carry an ISSN series number, just like journals, magazines and series of technical reports. To submit your paper, go to <http://www.easychair.org/conferences/?conf=eis09> (if necessary, create an account first).

ORGANISATION

Stijn Hoppenbrouwers (Radboud University Nijmegen), Richard Starman (SIKS)

PROGRAM COMMITTEE

Chair: Patrick van Bommel (RUN)

Members: Hans Akkermans (VU); Egon Berghout (RUG); Harry Bouwman (TUD); Sjaak Brinkkemper (UU); Bert de Brock (RUG); Virginia Dignum (UU); Paul Grefen (TUE); Remko Helms (UU); Willem-Jan van den Heuvel (UvT); Jos van Hillegersberg (UT); Stijn Hoppenbrouwers (RUN); Aldo de Moor (CommunitySense); Michaël Petit

(UN); Piet Ribbers (UvT); Hajo Reijers (TUE); Marten van Sinderen (UT); Monique Snoeck (KUL); Yao-Hua Tan (VU); Jan Vanthienen (KUL); Roel Wieringa (UT); Hans Weigand (UvT); Niek Wijngaards (Thales).

MORE INFORMATION

For more information, go to www.cs.ru.nl/eis09, or contact Stijn Hoppenbrouwers (stijnh@cs.ru.nl) or Irma Haerkens (i.haerkens@cs.ru.nl).

SIKS Basic Course “Research Methods and Methodology for IKS”

INTRODUCTION

On 25, 26, and 27 November 2009, the School for Information and Knowledge Systems (SIKS) organizes the annual three-day course “Research Methods and Methodology for IKS”. The location will be Conference center Woudschoten in Zeist. The course will be given in English and is part of the educational Program for SIKS-Ph.D. students. Although the course is primarily intended for SIKS-Ph.D. students, other participants are not excluded. However, their number of passes will be restricted and depends on the number of SIKS-Ph.D. students taking the course.

“Research Methods and Methodology for IKS” is relevant for all SIKS-Ph.D. students (whether working in computer science or in information science). The primary goal of this hands-on course is to enable these Ph.D. students to make a good research design for their own research project. To this end, it provides an interactive training in various elements of research design, such as the conceptual design and the research planning. But the course also contains a general introduction to the philosophy of science (and particularly to the philosophy of mathematics, computer science and AI). And, it addresses such divergent topics as “the case-study method”, “elementary research methodology for the empirical sciences” and “empirical methods for computer science”.

“Research Methods and Methodology for IKS” is an intense and interactive course. First, all students enrolling for this course are asked to **read some pre-course reading material**, comprising some papers that address key problems in IKS-methodology. These papers will be sent to the participants immediately after registration. Secondly, all participants are expected to give a **brief characterization of their own research project/proposal**, by answering a set of questions, formulated by the course directors, and based on the

mentioned literature. We believe that this approach results in a more efficient and effective course; it will help you to prepare yourself for the course and this will increase the value that you will get from it.

COURSE COORDINATORS

Hans Weigand (UvT), Roel Wieringa (UT), John-Jules Meyer (UU), Hans Akkermans (VU) and Richard Starmans (UU)

PROGRAM

The program will be announced in due course.

REGISTRATION

In the conference center there is a limited number of places and there is interest from other groups in the topic as well. Therefore, an early registration is required. For registration you are kindly requested to fill in the registration form.

ANNOUNCEMENTS

D-CIS Human Factors Event October 13-14, 2009

We cordially invite you to participate in the D-CIS Human Factors Event, which will be held on Tuesday 13th and Wednesday 14th of October at the D-CIS Lab, in Delft, the Netherlands.

In 2008 we organized the first D-CIS Human Factors Day, with interesting presentations, posters and demonstrations. The goal of the D-CIS Human Factors Day 2008 was to bring together researchers and technology developers with an interest in the human factors field. This D-CIS Human Factors Day was an excellent opportunity to gain insight in the state-of-the-art technology and research on human factors, to establish cooperation between technology providers and researchers and to discuss specific research needs in the field of human factors.

The D-CIS Human Factors Event 2009 continues this successful first event, again providing researchers the opportunity to present their research to industrial partners and end-users, and giving end-users the opportunity to gain insight knowledge of the research conducted in the Human Factors community.

To facilitate cooperation between industry and scientific research, we are introducing challenge groups on the second day of the D-CIS Human

Factors Event 2009. During these challenge groups, different topics will be proposed for discussion.

More information about the D-CIS Human Factors Event 2009 and about submitting contributions can be found on the website: www.humanfactors.decis.nl. The deadline for submitting abstracts is July 10th. The cost for the D-CIS Human Factors Event is €50,-.

CONFERENCES, SYMPOSIA WORKSHOPS

MAY 10-13, 2009

ACS/IEEE AICCSA'09: the 7th ACS/IEEE International Conference on Computer Systems and Applications. Rabat, Morocco.
<http://www.congreso.us.es/aiccsa2009>

MAY 18-19, 2009

18th Annual Belgian-Dutch Conference on Machine Learning (Benelearn 09). Tilburg, The Netherlands.
<http://benelearn09.uvt.nl/>

MAY 29-30, 2009

3IA'2009: The Twelfth International Conference on Computer Graphics and Artificial Intelligence. Athens, Greece.
http://3ia.teiath.gr/main_page.php

JUNE 3-5, 2009

2nd International Conference on Human-Robot Personal Relationships. Tilburg, The Netherlands.
<http://hrpr.uvt.nl/>

JUNE 3-5, 2009

The 3rd KES International Symposium on Agents and Multi-Agent Systems – Technologies and Applications (KES-AMSTA-09). Uppsala, Sweden.
<http://amsta-09.kesinternational.org>

JUNE 18-23, 2009

SENSORCOMM 2009: The Third International Conference on Sensor Technologies and Applications. Athens, Greece.
<http://www.iaria.org/conferences2009/SENSORCOMM09.html>

JUNE 25-27, 2009

HPCC-09: The 11th IEEE International Conference on High Performance Computing and Communications. Jointly with ISA-09: The 3rd IEEE International Conference on Information Security and Assurance. Korea University, Seoul, Korea.
<http://www.sersc.org/HPCC2009>
<http://www.sersc.org/ISA2009>

JULY 13, 2009

IJCAI-09 workshop on Cross-media Information Access and Mining (CIAM 2009). Pasadena, CA, USA.
<http://www.cs.kuleuven.be/~liir/conferences/CIAM2009/index.php>

JULY 23-25, 2009

MLDM 2009: the 6th International Conference on Machine Learning and Data Mining. Leipzig, Germany.
<http://www.mldm.de>

JULY 25-27, 2009

DMAMH'2009: 4th Workshop on Digital Media and its Application in Museum & Heritage. Qingdao, China.
<http://cise.sdkd.net.cn/dmamh>

AUGUST 6, 2009

KRAQ09: Knowledge and Reasoning for Answering Questions. ACL-IJCNLP 2009 workshop. Singapore.
<http://www.irit.fr/recherches/ILPL/kraq09.html>

AUGUST 9-11, 2009

The 4th International Conference on E-Learning and Games (Edutainment 2009). Banff, Canada.
<http://www.ask4research.info/edutainment/2009>

OCTOBER 29-30, 2009

21st Benelux Conference on Artificial Intelligence (BNAIC2009). Eindhoven, The Netherlands.
<http://www.wis.win.tue.nl/bnaic2009/>

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