



AAAI-08 Most Innovative Video Award

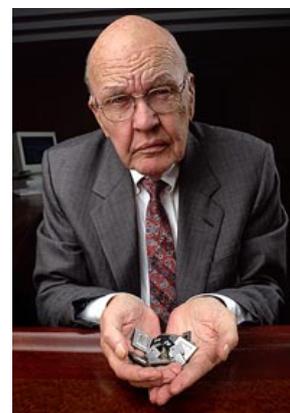
50 Years IC

BNAIC 2008 programme

Milestones: Past, Present, and Future

Editor-in-chief

Let me start with memorising an old milestone. In the summer of 1958, Jack S. Kilby just started as engineer at Texas Instruments. Having ample time for doing some free research (his fellow TI employees were on holidays mostly), he decided to tackle the “Tyranny of numbers” problem. In short, the main bottleneck for increasing electrical circuits was the inherent exponential growth in connecting wires. Kilby solved this problem by recognizing that the electrical circuit should be produced as a single piece of semiconductor material, what of course nowadays is called the Integrated Circuit, predecessor of the chip. He built an IC, proved that it worked at the end of August 1958, and demonstrated this to his superiors at September 12, 1958. Obviously this invention was of key importance for the development of powerful processor chips, with around 100 million transistors on a single processor chip nowadays. So it goes without saying that his invention of the IC 50 years ago was a key breakthrough for computer science in general, and thus for Artificial Intelligence in particular.



Jack S. Kilby.

So far so good. Now for a more recent milestone. In the research agenda 2005-2010 for ICT (*Met Vaste Hand. Nationale Onderzoeksagenda Informatie- en Communicatietechnologie (NOAG-ict) 2005-2010*, pp. 52-53.), Prof.dr. Jan Bergstra (UvA and UU) formulated 10 challenging problems for research in computer science / ICT. Problem 2 reads: “Design and build a computer that plays a strong game of Go. Anno 2005, Chess versus Go is exactly the difference between what a computer can do and, compared to humans, can’t do.” Now we are able to report that in a framework of only a few years computer Go programs have increased considerably in strength, mostly due to the application of a technique called Monte-Carlo Tree Search. Especially when such programs run on our national supercomputer *Huygens*, located at SARA Amsterdam, the improvement is impressive. In a press release by SARA the first victory of a computer program in 19×19 Go against an 8-dan human Go professional, Kim MyungWan, in an official match with 9 stones handicap is reported. The program is named MOGO TITAN, and is developed at INRIA France, in cooperation with the GO FOR GO team of Maastricht University. This really is an impressive result, and we congratulate the authors, especially Sylvain Gelly and Yizao Wang of INRIA, Paris, and Guillaume Chaslot of MICC, Maastricht.

Finally, the AAAI last year took the challenge of showing to a larger audience that AI research not only is worthwhile, but also is fun. They therefore organised the first AI Video competition as part of their AAAI-07 conference (see also p. 74 of the August 2007 issue of the BNVKI Newsletter for Belgian and Dutch good performances last year). Due to its success they organised the 2nd edition of this competition this year as part of the AAAI-08 conference. Out of 26 accepted entries, only 2 were from Europe, and only 1 was by researchers of our community. This entry was entitled *Digital Analysis of Van Gogh Paintings*, by Laurens van der Maaten and Eric Postma of Maastricht University. To give you an impression, I quote the description: “Computer processing of digital images of artwork is an emerging and rapidly growing cross-disciplinary activity. The video presents a prototype of a system that can assist art experts in the authenticity assessment of alleged Van Gogh paintings. The presented system is based on a combination of texon-based texture analysis and *t*-Distributed Stochastic Neighbor Embedding.” I am very pleased to report that this entry was recognized as very innovative indeed (perhaps leading to a milestone in the near future?) and thus won the award for Most Innovative Video. Marc Ponsen, attending the conference and receiving the award on the authors’ behalf, reports on pp. 52-53.

Wikipedia’s entry on Jack Kilby: http://en.wikipedia.org/wiki/Jack_Kilby

Ten computer science problems: <http://www.ictonderzoek.net/?m=68>

SARA’s press release:

http://www.sara.nl/news/press/20080813/Go_computer_victory_eng.html

AAAI-08 AI Video Competition: <http://www.aivideo.org/>

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The photograph on p. 76 is by David Aha, and the one on p. 77 by Laurens van der Maaten.

Front cover: screenshot from the award-winning video *Digital Analysis of Van Gogh Paintings*, by Laurens van der Maaten and Eric Postma of University Maastricht. See editorial for more information.

The deadline for the next issue is: **October 1, 2008**.

BNVKI-Board News

Antal van den Bosch

Our association's highlight of the year is, of course, BNAIC. The BNAICs of recent years have demonstrated that AI in the Low Countries is doing well – very well, indeed. This year is no exception. The board was very happy to learn from the organizers of BNAIC-2008, in Twente (Bad Boekelo, 30-31 October 2008), that the proceedings will contain 36 original publications (“A” papers). So, quite a bit of new work will see the light of day in Bad Boekelo; this is exactly what one hopes of a good BNAIC.

Together with 52 accepted “B” papers (already published studies) and 11 demos, BNAIC will feature an interesting and varied programme with the accepted papers divided over oral and poster presentations. Be sure to visit the website <http://hmi.ewi.utwente.nl/bnaic2008/> to read the latest news on invited speakers, registration, and the programme.

We hope to meet you there, and as ever, we would like to exchange ideas with you and report on how the association has been doing the past year, in our general assembly, also held during BNAIC-2008. See you in Bad Boekelo!

BNVKI/AIABN General Assembly

October 31, 2008
Bad Boekelo, the Netherlands

During the lunch break of the 2nd day of BNAIC 2008 (i.e., from 13.15-14.00) the BNVKI/AIABN general assembly will be held in room “Linde”. All BNVKI/AIABN members are cordially invited to attend.

The agenda reads:

0. Opening
1. Minutes meeting general assembly November 6, 2007 (see the December 2007 issue of the BNVKI Newsletter, pp. 128-129)
2. Announcements
3. Financial Report 2007
4. Auditing committee 2008
5. Progress report 2008 and plans for 2009
6. Alternative namings for BNVKI and BNAIC
7. BNAIC 2009
8. End of meeting

Dutch Team Awarded with Oscar at the AAAI-08 Video Competition

Marc Ponsen
MICC, Maastricht University

Since the previous edition of its annual conference, the AAAI organizes an annual video competition to “show the world how much fun AI is”. AI researchers are invited to submit narrated videos accessible to a broad audience on exciting AI projects. Together with a team of international AI researchers, the chairs David Aha and Sebastian Thrun formed the Program Committee for the 2008 Video Competition. In total 36 videos were submitted of which the Program Committee accepted 26. Of these accepted videos, two were submitted by European research groups (EPFL, Switzerland and Maastricht University, The Netherlands). The remaining 24 videos were submitted by researchers from the United States. The Dutch video was submitted by Laurens van der Maaten and Eric Postma and titled “Digital Analysis of Van Gogh Paintings”. Since both authors were not present at the AAAI conference in Chicago, they requested me to attend the ceremony at the AAAI/IAAI-08 on July 14, 2008 in Chicago and to receive an award if any on their behalf.



Marc Ponsen receives the Oscar for the Best Innovative Video and improvises a speech.

There were seven awards: the Most Innovative Video, the Best Student Video, the Best Short

Video, the Best Demonstration Video, the Best Educational Video, the Best Video Narration, and the Best Video. The reviewing criteria were, amongst others, the relevance to AI, the degree of excitement and the educational content.

The first category was the Most Innovative Video. Just before the ceremony I asked David Aha if the winners had to speech. "Of course!" he answered. The winners of the Most Innovative Video were my colleagues Laurens and Eric, so I had to step up the stage and improvise a speech. The award was (a replica of) an Oscar.

Dutch and Belgian AI researchers are encouraged to submit videos to the next AAAI conference. In addition, it would be very nice if the BNAIC would organize a Belgian-Dutch Video competition! Rather than awarding Oscars, the BNAIC may award a Golden Calf or Golden Globe.

An overview of the nominated and awarded AI videos can be found at <http://www.aivideo.org/>.



Eric Postma proudly showing their Oscar.

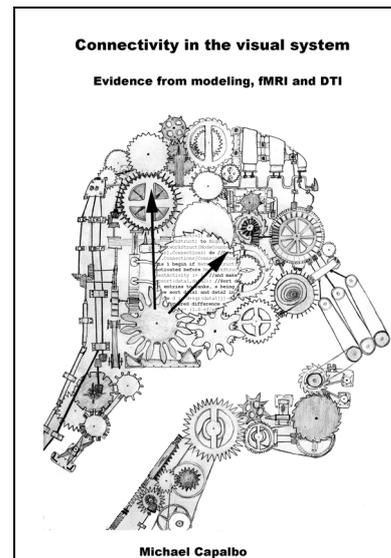
PH.D. THESIS ABSTRACTS

Connectivity in the Visual System: Evidence from Modeling, fMRI and DTI

Ph.D. thesis abstract
Michael Capalbo

Promotors: Prof.dr. R. Goebel and Prof.dr. E.O. Postma

Date of defense: May 9, 2008



Since the development of powerful functional magnetic resonance imaging (fMRI) machines, part of cognitive psychology underwent a revolution. In the pre-fMRI era, the brain was treated as a black box. Cognitive psychologists studied brain processes by submitting human subjects to a variety of tests and measuring their performances on these tests. From the results, they inferred "box-and-arrow" models of cognitive processing, i.e., the mental processes in the brain. Since the last decades, within the field of cognitive neurosciences, fMRI studies partially opened the black box providing insight into the anatomical and functional properties of the brain. Artificial Intelligence contributes to the domain of cognitive neurosciences in two respects: (1) the modeling of brain areas and function using neural network models and (more recently) probabilistic models and (2) the analysis of the results of fMRI (and other imaging) experiments using image processing and machine-learning techniques. Michael Capalbo's thesis is situated on the edge of AI and cognitive neuroscience and addresses modeling, plain fMRI analyses, and the use of an advanced fiber-tracking technique.

The anatomical and functional structure of the visual system

The Ph.D. thesis of Michael Capalbo focuses on three interrelated themes in the domain of cognitive neuroscience. All three themes address the anatomical and functional structure of the human visual system. The first theme is the modeling of the large-scale structure of the human visual system. The second theme is the determination of the functional structure of the visual system using functional Magnetic Resonance Imaging. The third theme is the exploration of the subcortical – cortical connections in the visual system using diffusion tensor tractography. The three themes are addressed

in the three core chapters of his thesis, chapters 2, 3, and 4, respectively.

Since the previous century, it is known that the human visual system has a modular architecture. Visual mechanisms are (partly) executed by anatomically and functionally segregated brain areas (cortical modules). In 1991, Felleman and Van Essen performed an extensive study of the identified modules of the visual system and their interconnections. Their main conclusion was that the visual system has a hierarchical structure. At the lowest levels of the hierarchy, visual signals (collected by the retinas) are processed to detect intensity or color transitions, whereas at the highest levels of the hierarchy, the identification of objects takes place. Although such a hierarchical scheme makes intuitive sense, there is still considerable debate about the true structure of the visual system. The debate is fueled by results from two types of neuro-scientific studies: anatomical studies and electrophysiological studies. A few anatomical studies reveal connections between brain areas that are inconsistent with the hierarchy and some electrophysiological studies indicate that the activation of modules at higher levels of the hierarchy sometimes precede the activation of lower levels of the hierarchy.

In an attempt to integrate both sources of evidence, in chapter 2 of his thesis, Michael Capalbo generated models of the connectivity of the visual system subject to the constraint that they are consistent with both types of data. He did this by optimizing the connection matrix of the graph modeling the connectivity of the visual system using simulated annealing. The energy (or cost) function contained two terms that reflected the agreement with anatomical evidence (presence or absence of an anatomical connection) and electrophysiological evidence (relative activation latencies).

The resulting structures were found to be inconsistent with the hierarchy proposed by Felleman and Van Essen. The combined evidence from the two types of neuro-scientific studies generated an alternative single-level structure. An important discovery of the modeling study is the crucial role of sub-cortical structures that seem to bypass the cortical route, explaining the “early” activation of the modules involved in the high-level processing of visual information.

Inspired by the results obtained by the modeling study, Capalbo continued his research by trying to establish the presence of connections using fMRI studies. In chapter 3, he determined so-called “localizers” for the modules in the visual system by

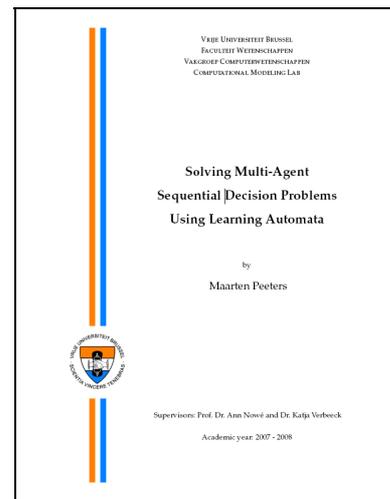
presenting subjects with stimuli that specifically activate the module. Building on the acquired knowledge of the different modules, in chapter 4 he applied Diffusion Tensor Imaging (DTI), a technique for tracking nerve fibers in the brain, to establish the presence of connections between sub-cortical and cortical visual areas. His studies revealed the presence of such connections between sub-cortical structures and modules involved in the higher-level processing of visual information.

The thesis of Capalbo illustrates the importance of the combination of modeling and fMRI studies to further open the gray box. From his thesis it is apparent that present and future developments in cognitive neuroscience offer interesting challenges for artificial intelligence.

Solving Multi-Agent Sequential Decision Problems Using Learning Automata

Ph.D. thesis abstract
Maarten Peeters

Promotor: Prof.dr. A. Nowé
Date of defense: May 19, 2008



My dissertation discusses a study of the behaviour of hierarchical learning automata in sequential decision problems.

In the first part of the dissertation, we focus on the aspect of exploration. First of all, we provide theoretical evidence that policy gradient learners can be linked to learning automata. Furthermore, we show how policy gradient agents can apply a similar exploration technique as the learning automata because this exploration is the foundation for convergence to an attractor point in a multi-agent decision problem. If we limit the action set of the

agents to 2 actions, then we show that it is possible to unify the learning automata exploration scheme with the Boltzmann exploration; a technique that is often used in multi-agent reinforcement learning. If we do not limit the action set to 2 actions, learning automata exploration outperforms the Boltzmann function with a decaying temperature.

If we combine a set of learning automata into more complex structures like hierarchies, the exploration strategy of the structure can be improved because hierarchical learning automata are not guaranteed to find the optimal solution in decision problems. Therefore, the Hierarchical Exploring Selfish Reinforcement Learners (HESRL) are developed. The goal of the HESRL algorithm is to guide the learning process of independent agents in stochastic, distributed systems. The HESRL algorithm consists of 2 separate phases. During the first phase, the HESRL agents are acting and learning as though they were independent agents. After some time, the agents are converged to an equilibrium path in the multi-stage tree (this is guaranteed by the theory of hierarchical learning automata). At this point, the agents independently exclude an action from their action space and a new phase of independent learning starts. If the process keeps repeating these two phases, the learning automata visit different attractive Nash paths in the game and increase the chances of finding the optimal path in a low amount of time steps. For the synchronisation phase, we created two algorithms: Top-Down and Bottom-Up exclusions. They denote where the exclusions start in the hierarchy of learning automata, at the bottom or at the top. Based on the Bottom-Up exclusion algorithm, we created a technique called Periodic Policies for solving sequential decision problems where the personal preferences of the agents do not coincide.

The second part of the dissertation discusses the convergence performance and speed of hierarchical learning automata. It is shown that both can be improved by applying bootstrapping. Traditionally, hierarchical learning automata use the Full Path update algorithm in which the automata are updated with rewards gathered over the complete path. If this algorithm is used, the convergence performance and speed drop drastically in terms of the length of the sequential decision process. Also, learning automata can only update their action probabilities when an explicit end-stage is reached. We solved these problems in several steps. First of all, the Intermediate Rewards algorithm was introduced. Now, the learning automata are no longer updated using all rewards of the chosen path yet only using the rewards of the remainder of the path. Actually, the learning automata have less information available, yet the information they have is more

relevant for their own behaviour. We provide theoretical proofs that guarantee that by using this algorithm, the hierarchical automata will still converge to a Nash path in the game under the same conditions as the Full Path algorithm. Although the Intermediate Rewards algorithm is shown to behave better than the Full Path algorithm, it still needs an explicit end-stage. This can be solved by using the n -step algorithm in which the learning automata in the hierarchy will be updated on the basis of the first n immediate rewards. A final algorithm implements eligibility traces and the updating of the probabilities can be done instantly by using immediate rewards. This gives rise to an online algorithm which performs very well in terms of convergence accuracy or convergence speed.

Finally, the application of the Periodic Policies algorithm in a realistic setting is presented. We show that hierarchical learning automata extended with social behaviour can find fair solutions in real-time, asynchronous control and planning of a chemical batch production process. This application demonstrates the robustness of the algorithm in unexpected situations and also that multi-agent learning systems can provide solid solutions for complex problems.

Embodied Agents from a User's Perspective

Ph.D. thesis abstract
Henriette van Vugt

Promotores: Prof.dr. J. Kleinnijhuis and Prof.dr.
G.C. van der Veer
Date of defense: June 25, 2008



The central question this thesis examines is: how do computer users respond to so-called *embodied agents*? Embodied agents are computer programs that appear on the screen with a human- or animal-like appearance. The virtual IKEA-employee Anna¹ or Virtual Katja² on the Internet, the paperclip in Microsoft programs, and characters in virtual worlds such as Grand Theft Auto are examples of embodied agents. However, it is not clear why computer users engage emotionally with, that is, feel involved with or feel distant to an embodied agent, and why they do or do not want to use an agent. To better understand how engagement processes and interaction processes are evoked, it is important to study embodied agents from a psychological perspective. That is, when we want to increase our understanding on how computer users respond to embodied agents, we should study them from the perspective of the user.

The aim of this thesis, thus, is to increase our understanding of the psychological processes that are evoked when an embodied agent appears on the screen, in order to improve their designs. To investigate these processes in more depth we used several theories. First, we used the PEFiC model (Perceiving and Experiencing Fictional Characters), that explains the engagement process of film and television viewers on fictional characters, such as Dracula and Superman. PEFiC states that a complexity of factors – ethics (good versus bad, reliable versus unreliable), aesthetics (beautiful versus ugly), realism, similarity (for example, in appearance or behaviour), personal relevance, and valence (positive or negative outcome expectations) – contribute to the emotional binding with fictional characters, in other words, to the engagement process. In this thesis, we adjusted the PEFiC model to the embodied-agent domain. Contrary to fictional characters, embodied agents have an interactive component. Users can actively interact with embodied agents and use embodied agents in the execution of tasks, such as searching information on the Internet. The PEFiC model therefore is extended with an interaction process, and is called Interactive PEFiC, or I-PEFiC. This interaction process is based on several theories from literature explaining why computer users do or do not use systems of varying type. The interaction process states that the potentials for action (affordances) provided by an embodied agent to the user determine whether a user wants to use an embodied agent or not. It also states that the relevance of the agent for the user's task and the outcome expectations the user has (for example, is the agent effective and efficient?) also

play a role. In addition, I-PEFiC assumes that user satisfaction depends on both the engagement process and the interaction process. I-PEFiC thus comprises two layers. The first layer concerns the character-side of embodied agents, and describes an engagement process. The second layer concerns the system-side of embodied agents and describes an interaction process.

Notwithstanding the fact that the I-PEFiC model is based on existing theories and models, the model should be investigated in more depth, empirically. For instance, we should study whether factors that can explain responses from viewers of fictional characters in films indeed can explain responses from computer users on embodied agents. Moreover, it is interesting whether the typical character factors (like aesthetics and realism) also affect the interaction process or the system-side of human-agent interactions and whether the typical interaction factors (like affordances and task relevance) also affect the engagement process or the character-side. Therefore, several empirical studies have been performed in this thesis. In each study, one or more factors of an embodied agent were varied to investigate the (combined) effect on emotional engagement, use intentions and satisfaction.

Chapter 1 provides an overview of the manipulated and measured factors per study. In Chapter 2 we investigated whether (form) realism is a key factor for user responses to embodied agents, or whether other factors are more important. Results showed that aesthetics and task relevance were more important than realism. In Chapter 3 we therefore investigated how aesthetics, a factor from the character-side of I-PEFiC, and affordances, a factor of the system- or task-side of the model, affect user responses on embodied agents. The results indicated a strong effect of affordances within the system-side, but also a strong cross-over effect to the character-side. In Chapter 4, we therefore decided to study the effects of affordances on user responses more closely. We studied how affordances and facial similarity between user and embodied agent, another factor of the character side of the model, affect user responses. Again, affordances had a strong effect within the system-side of the model, but also a strong cross-over effect to the character-side. Facial similarity had an effect within the character-side and, interestingly, also on the system-side, but only for men. The effects of facial similarity were remarkable, since the participants of the experiments were *unaware* of the facial-similarity manipulation. In Chapter 5, we continued to study similarity effects, but on a different dimension. We investigated whether body-size similarity and body-size idealness (related to the

¹ <http://www.ikea.com>

² <http://www.katja-schuurman.com>

factor of aesthetics) affect user responses to embodied agents. Results showed that a non-ideal figure had a stronger effect than similarity on both the character-side and the system-side, and that these effects were mostly indirect, via perceptions of ethics. It is interesting to note that participants perceived the non-ideal (bigger) agents as ethically better (more trustworthy) than the ideal (thinner) agents.

Based on these results we can give the following answer to the question how computer users respond to embodied agents. The system-side of human-agent interaction is more important for the various user responses than the factors of the character-side that deal with the appearance of the agent (realism, aesthetics, face similarity, similarity and idealness of body size). The factor ethics is a remarkable exception. Although the factor ethics belongs to the character-side, it is important for the various user responses, i.e., also for use intentions. Preferably, people do not use a bad character. Remarkable is that the typical interaction factor affordances is more important for emotional engagement than several typical character factors such as aesthetics, realism and facial similarity, that all deal with the appearance of the agent. However, appearance factors of the character-side can affect user responses in unexpected ways, in combination with a factor of the system-side, affordances. When affordances obstruct the user to reach his goal, a positive feature such as beauty and facial similarity can have a negative effect on user responses. Furthermore, users perceive an embodied agent within their task or goal context, in terms of task relevance and valence (expectations whether the use of the agent will lead to task completion or not). An agent that is perceived in terms of affordances and ethics is 'valued' on task relevance and valence, and these perceptions of relevance and valence then result in the different user responses (relevance and valence are so-called 'mediators'). Finally, user satisfaction depends on both the engagement process and the interaction process, and is a complex construct. What is going on in the user's mind is not expressed very well in terms of 'satisfaction'. Based on the above we can distinguish five remarkable conclusions: 1) realism is not that important for emotional engagement and use intentions, 2) what is beautiful is not always used, 3) affordances and ethics are central factors for emotional engagement and use intentions, 4) positive features do not always lead to positive effects, and 5) relevance and valence of user goals are mediators.

The results of the studies have led to the development of the Revised I-PEFiC model, which describes the psychological processes that are

evoked when an embodied agent appears on the screen, on an empirical basis. This thesis thus has yielded a contribution to theory formation on embodied agents. Of course, the insights can also be used by designers of embodied agents. For instance, for designers it is important to realise that the interactive side of agents and the task the user is executing are not only of crucial importance for use intentions, but that they strongly affect the user's emotional engagement with agents as well. The affordances of an agent appeared an even stronger factor than the appearance of the agents. Designing a realistic or beautiful agent is not always the best design strategy. A beautiful appearance can also not compensate for a clumsy interface or badly functioning software. It may even result in stronger negative effects than an ugly interface. An effective designer first creates an agent that is sufficiently intelligent, such that it is really useful to a user, and only then, as an added value, gives the agent a more beautiful appearance.

A Speed up of the Procedure

*Jaap van den Herik
MICC-IKAT, Maastricht*

Human beings are ingenious agents who are able to make straightforward matters complex. It is a form of scaling up. Thereafter always comes a period of scaling down.

In the past, the Ph.D. procedure was simple: there was a candidate (promovendus) and a supervisor (promotor). At the side of the supervisor the procedure was broadened in two respects: (a) more at the same level (two or three supervisors) and (b) more at a deeper level (one or two co-promotores). So far, for the guidance.

Of course, all what is guided should be checked. So, we have an assessment committee of three to six members of which the ruling for composition differs from university to university. Then, some universities decided to guarantee the quality of the thesis by inserting a new task between the team of supervisors and the team of assessors. This task of establishing the quality of a thesis was to be performed by the *referent* (Eng. reviewer). The intermediary person should be knowledgeable in the topic under investigation, but not involved in the research performed by the promovendus. The referent was usually allotted four to six weeks for perusing the thesis. Naturally, this task was in the longer run also broadened in quality (more reviewers) and in depth by the occurrence of a *co-referent*.

In summary, a Ph.D. trajectory was a whole embellishment, that was different to explain to the family members of any promovendus.

Over the last 20 years the procedures were closely investigated on efficacy and efficiency. Even the oldest and most traditional University had to bow for this reorganisation. One of the very last faculties to bow was the one but oldest Faculty in our country, i.e., the Faculty of Law at the Leiden University. In the spring of 2008, Vice-Chancellor Professor Paul van der Heijden reigned that the function of *referent* was abolished per direct. A relic has been eliminated and the Ph.D. trajectory was shortened by approximately two months. It was a well-thought decision in the framework of the European harmonization of our University education.

Below we provide you with three lists, viz. the future Promovendi, the inaugural addresses of three new professors and the farewell speech of two professors who change University. We wish the members of all three classes a prosperous future.

Zharko Aleksovski (September 5, 2008). *Using Background Knowledge in Ontology Matching*. Vrije Universiteit. Promotor: Prof. dr. F. van Harmelen (VU). Co-promotor: Dr. W. ten Kate (VU).

Georgi I. Nalbaltov (September 11, 2008). *Essays on Some Recent Penalization Methods with Applications in Finance and Marketing*. Erasmus Universiteit Rotterdam. Promotor: Prof. dr. P.J.F. Groenen (EUR). Co-promotor: Dr. J.C. Bioch (EUR).

Henk Koning (September 24, 2008). *Communication of IT-Architecture*. Universiteit Utrecht. Promotors: Prof. dr. S. Brinkkemper (UU), Prof. dr. J.C. van Vliet (VU). Co-promotor: Dr. R. Bos (UU).

Krisztian Balog (September 30, 2008). *People Search in the Enterprise*. Universiteit van Amsterdam. Promotor: Prof.dr. M. de Rijke (UvA).

Stefan Visscher (September 30, 2008). *Bayesian Network Models for the Management of Ventilator-associated Pneumonia*. Universiteit Utrecht. Promotor: Prof.dr. M.J.M Bonten (UU/UMCU). Co-promotors: Dr. P. Lucas (RUN), Dr. C.A.M. Schurink (EUR).

Pashiera Barkhuysen (October 3, 2008). *Audiovisual Prosody in Interaction*. Universiteit van Tilburg. Promotors: Prof.dr. M.G.J. Swerts (UvT), Prof.dr. E.J. Kraemer (UvT).

Geert Jonker (October 6, 2008). *Efficient and Equitable Exchange in Air Traffic Management Plan Repair using Spender-signed Currency*. Universiteit Utrecht. Promotor: Prof.dr. J-J. Ch. Meyer (UU). Co-promotor: Dr. F. Dignum (UU).

Rex Arendsen (October 7, 2008). *Geen Bericht, Goed Bericht. Een onderzoek naar de effecten van de introductie van elektronisch berichtenverkeer met de overheid op de administratieve lasten van bedrijven*. Universiteit van Amsterdam. Promotor: Prof.dr. T.M. van Engers (UvA).

Ayman Khedr (October 8, 2008). *Adoption of New Technologies in a Highly Uncertain Environment*. Universiteit Leiden. Promotors: Prof.dr. J. Kok (UL) and Prof.dr. H. Borgman (UL).

Loes Braun (October 29, 2008). *Pro-Active Medical Information Retrieval*. Maastricht University. Promotors: Prof.dr. H.J. van den Herik (UvT) and Prof.dr. A. Hasman (UvA). Co-promotor: Dr. F. Wiesman (UvA).

Marijn Huijbregts (November 21, 2008). *Segmentation, Diarization and Speech Transcription: Surprise Data Unraveled*. University of Twente. Promotor: Prof. dr. F.M.G. de Jong (UT). Co-promotor: dr. R.J.F. Ordelman (UT).

Ildiko Flesch (November 27, 2008). *On the Use of Independence Relations in Bayesian Networks*. Radboud Universiteit Nijmegen. Promotor: Prof.dr. Th. van der Weide (RUN). Co-promotor: Dr. P. Lucas (RUN).

Ben Torben-Nielsen (December 3, 2008). *Dendritic Morphology: Function Shapes Morphology*. Tilburg University. Promotors: Prof.dr. H.J. van den Herik (UvT) and Prof.dr. E.O. Postma (UvT). Co-promotor: Dr. K. Tuyls (TU/e).

Gijs Geleijnse (December 8, 2008). *Information Extraction from the Web using a Search Engine*. Eindhoven University of Technology. Promotor: Prof. dr. E. Aarts (TU/e). Co-promotor: Dr. J. Korst TU/e).

INAUGURAL ADDRESSES

With much pleasure we announce the following three inaugural addresses.

Prof.dr. Antal van den Bosch (October 10, 2008). *Het Volgende Woord*. Tilburg University, Aula, Tilburg, 16.15 hours.

Prof.dr. A.F. Harmsen (November 6, 2008). *Knowledge Management of Global Work*.

Maastricht University, Aula, Maastricht, 16.30 hours.

Prof.dr. J. Scholtes (January 23, 2009). Maastricht University, Aula, Maastricht, 16.30 hours.

FAREWELL SPEECH

Having served the Maastricht University for forty years, Jaap van den Herik and Eric Postma leave Maastricht and do so in a combined farewell speech.

Prof.dr. H.J. van den Herik and Prof.dr. E.O. Postma (October 16, 2008). *Veertig Jaar, Zes Doorbraken*. Maastricht University, Aula, Maastricht, 16.00-17.00 hours.



MLMI 2008 – 5th Workshop on Machine Learning and Multimodal Interaction

September 8-10, 2008
Utrecht, the Netherlands

<http://www.mlmi.info>

Registration is now open for the fifth MLMI workshop, and the advance registration deadline is July 1. The workshop website has more information about invited speakers, accepted papers, venue and collocated events: <http://www.mlmi.info>.

The MLMI series brings together researchers from the different communities working on the common theme of advanced machine-learning algorithms applied to multimodal human-human and human-computer interaction. The proceedings will appear in Springer's LNCS series, available at the workshop – the first four MLMIs are LNCS 3361, 3869, 4299, and 4892.

As a result of the cooperation between SIKS and the organizers of the workshop, SIKS-Ph.D. students

can participate without paying fee. However, the number of places available is limited. For a free participation as a SIKS-Ph.D. student, please visit the SIKS-site.

ORGANISATION

- David van Leeuwen, TNO (Organization Chair)
- Anton Nijholt, University of Twente (Special Sessions Chair)
- Andrei Popescu-Belis, IDIAP Research Institute (Programme Co-chair)
- Rainer Stiefelhagen, University of Karlsruhe (Programme Co-chair)

ERIM / SIKS Workshop

Introduction and Developments on Support Vector Machines and Classification

Date: Friday, September 12, 2008
Organizers: Patrick Groenen, Georgi Nalbantov, Cor Bioch
Venue: Erasmus University Rotterdam, Burg. Oudlaan 50, room J1-41

Support vector machines (SVM) have become a valuable method for the prediction of two classes. Often, the SVM is the best method to classify the two groups. One of the aims of this workshop is to introduce the technique of support vector machines. Another aim is to discuss the use of kernels to allow for nonlinearity of the predictor variables. This workshop brings together several leading researchers active in this area in the Netherlands and two foreign guests, Sarel Steel (Stellenbosch University, South Africa) and Thorsten Joachims (Cornell University NY, USA).

This ERIM / SIKS workshop is part of the Advanced Components stage of SIKS' educational program. **Therefore all SIKS Ph.D. students working on the focus "Computational Intelligence" are strongly encouraged to participate.** Of course, all other SIKS-members are more than welcome too.

PROGRAM

- 10:00-10:30 Welcome with coffee
10:30-11:10 Ida Sprinkhuizen-Kuyper (Radboud University Nijmegen): *Introduction to Support Vector Machines, a powerful tool for classification and prediction*
11:10-11:50 Patrick Groenen (Erasmus University Rotterdam): *Support Vector*

- Machines using Majorization and Kernels*
- 11:50-12:00 Coffee
- 12:00-12:40 Evgueni N. Smirnov (Maastricht University): *Version Space Support Vector Machines*
- 12:40-13:45 Lunch
- 13:45-14:25 Georgi Nalbantov (Maastricht University): *Instance-based Penalization Methods for Classification*
- 14:25-15:05 Sarel Steel (Stellenbosch University, South Africa): *Variable Selection for Kernel Methods*
- 15:05-15:30 Break
- 15:30-16:20 Thorsten Joachims (Cornell University NY, USA): *Support Vector Machines for Structured Output Prediction*
- 16.20 Drinks

ABSTRACTS

Ida Sprinkhuizen-Kuyper (Radboud University Nijmegen); *Introduction to Support Vector Machines, a powerful tool for classification and prediction.*

Abstract: I will give an introduction of the most important notions for understanding Support Vector Machines and how to use them.

Patrick Groenen (Erasmus University Rotterdam); *Support Vector Machines using Majorization and Kernels.*

Abstract: Support vector machines have become one of the main-stream methods for two-group classification. In Groenen, Nalbantov, and Bioch (2007, 2008), we proposed SVM-Maj, a majorization algorithm that minimizes the SVM loss function. A big advantage of majorization is that in each iteration, the SVM-Maj algorithm is guaranteed to decrease the loss until the global minimum is reached. Nonlinearity was reached by replacing the predictor variables by their monotone spline bases and then doing a linear SVM. A disadvantage of the method so far is that if the number of predictor variables m is large, SVM-Maj becomes slow.

In this paper, we extend the SVM-Maj algorithm to handle efficiently cases where the number of observations n is (much) smaller than m . We show that the SVM-Maj algorithm can be adapted to handle this case of $n \ll m$ as well. In addition, the use of kernels instead of splines for handling the nonlinearity becomes also possible while still maintaining the guaranteed descent properties of SVM-Maj.

Evgueni N. Smirnov (Maastricht University); *Version Space Support Vector Machines*

Abstract: In this talk we consider version spaces as an approach to reliable classification. The key idea is to extend version spaces to contain the target hypothesis t or hypotheses similar to t . In this way, the unanimous-voting classification rule of version spaces does not misclassify; that is, instance classifications become reliable.

We propose to implement version spaces using support vector machines. The resulting combination is called version space support vector machines. Our experiments show that version space support vector machines are able to outperform the existing approaches to reliable classification.

Georgi Nalbantov (Maastricht University); *Instance-based Penalization Methods for Classification*

Abstract: Three instance-based penalization methods for classification are presented: Support Hyperplanes, Nearest Convex Hull classifier, and Soft Nearest Neighbor. It is shown that the popular Support Vector Machine classifier can also be viewed as such a method. The relative merits between all of these classifiers are discussed, as well as their theoretical foundations. An emphasis is put on the role of penalization in general and why it is imperative to penalize (the coefficients of) unbiased methods to achieve better forecasting results.

Sarel Steel (Stellenbosch University, South Africa); *Variable Selection for Kernel Methods*

Abstract: Kernel methods such as the support vector machine (SVM) and kernel Fisher discriminant analysis (KFDA) are popular for analysing large data sets. The aim of variable selection is to identify important subsets of the input variables which yield better generalisation performance than the set consisting of all the input variables. In this presentation a brief overview of variable selection for kernel methods will be given.

Thorsten Joachims (Cornell University); *Support Vector Machines for Structured Output Prediction*

Abstract: This talk explores large-margin approaches to predicting graph-based objects like trees, clusterings, or alignments. Such problems arise, for example, when a natural language parser needs to predict the correct parse tree for a given sentence, when one needs to determine the co-reference relationships of noun-phrases in a document, or when predicting the alignment between two proteins. In particular, the talk will show how structural SVMs can learn such complex prediction rules, using the problems of supervised clustering, protein sequence alignment, and diversification in search engines as application examples. Furthermore, the talk will present new

cutting-plane algorithms that allows training of structural SVMs in time linear in the number of training examples.

Biography: Thorsten Joachims is an Associate Professor in the Department of Computer Science at Cornell University. In 2001, he finished his dissertation with the title *The Maximum-Margin Approach to Learning Text Classifiers: Methods, Theory, and Algorithms*, advised by Prof. Katharina Morik at the University of Dortmund. From there he also received his Diplom in Computer Science in 1997 with a thesis on WebWatcher, a browsing assistant for the Web. From 1994 to 1996 he was a visiting scientist at Carnegie Mellon University with Prof. Tom Mitchell. His research interests center on a synthesis of theory and system building in the field of machine learning, with a focus on Support Vector Machines and machine learning with text. He authored the SVM-Light algorithm and software for support vector learning.

Participation in the workshop is free. To know the number of participants in advance, please register by sending an e-mail to Elli Hoek van Dijke (hoekvandijke@few.eur.nl).

Workshop ECAG '08 for SIKS-Ph.D. Students

Facial and Bodily Expressions for Control and Adaptation of Games (ECAG'08)

<http://hmi.ewi.utwente.nl/conference/ECAG08>

Workshop organized in conjunction with the 2008 IEEE International Conference on Automatic Face and Gesture Recognition (<http://www.fg2008.nl/>) FG 2008.

Date: September 16 (one day before the FG 2008 conference), Amsterdam.

Facial and Bodily Expressions for Control and Adaptation of Games

Many interactive systems observe the human body and face and use these as a means for input. Examples are playing a boxing game using body movements, mimicking the user's facial expressions in Second Life, controlling a robot in a home environment, or adapting the teaching strategy based on the detection of frustration in a tutoring application. In these examples, observations of the face and body are used in different forms, depending on whether the user has the initiative and consciously uses his or her movements and expressions to control the interface or whether the

application takes the initiative to adapt itself to the affective state of the user as it can be interpreted from the user's expressive behaviour. Hence, we look at:

• Voluntary control

The user consciously produces facial expressions, head movements or body gestures to control a game. This includes commands that allow navigation in the game environment or that allow movements of avatars or changes in their appearances (e.g., showing similar facial expressions on the avatar's face, transforming body gestures to emotion-related or to emotion-guided activities). Since the expressions and movements are made consciously, they do not necessarily reflect the (affective) state of the gamer.

• Involuntary control

The game environment detects, and gives an interpretation to the gamer's spontaneous facial expression and body pose and uses it to adapt the game to the supposed affective state of the gamer. This adaptation can affect the appearance of the game environment, the interaction modalities, the experience and engagement, the narrative and the strategy that is followed by the game or the game actors.

We are soliciting papers that discuss research into this area, with a strong focus on applications. We consider the domain of entertainment, (serious) gaming and simulation. In addition to video-based observation, we also consider other means of input, including multi-modal approaches. Technical papers, as well as survey papers and empirical papers are eligible.

Authors are invited to submit papers (between six and fifteen pages), using the formatting guidelines of the main conference. Papers will be refereed by at least three reviewers. Accepted papers will appear in paper proceedings with ISSN/ISBN. Send papers to anijholt@cs.utwente.nl.

REGISTRATION

Registration is open for all FG2008 participants and for others. Registration for the workshop is free for all SIKS-PhD-students. Deadline: September 1, 2008.

PROGRAMME CHAIRS AND ORGANIZERS

- Anton Nijholt (HMI, University of Twente, the Netherlands)
- Ronald Poppe (HMI, University of Twente, the Netherlands)

SIKS-day 2008 in Utrecht

On October 2, 2008, the School for Information and Knowledge Systems (SIKS) organizes its annual SIKS-day. The location will be City Castle Oudaen in Utrecht (<http://www.oudaen.nl/>).

The main aim of the event is to give SIKS-members, participating in research groups all over the country, the opportunity to meet each other in an informal setting and to inform them about current developments and some new activities and plans for the coming year. This year a small scientific symposium will be organized at the SIKS-day as well. Four invited speakers have agreed to perform (see the program below). By inviting these researchers we hope to have selected the right ingredients for a memorable day. All members of our research school (research fellows, associated members and Ph.D. students) as well as the members of SIKS' Advisory Board and our alumni are invited to participate.

PROGRAM

“Creating Better Information Systems with Process Mining” *Wil van der Aalst (TU/e)*

Process mining addresses the problem that most organizations have very limited information about what is actually happening in their organization. In practice, there is often a significant gap between what is prescribed or supposed to happen, and what actually happens. As a result, information systems are not fitting or ignorant of the true processes taking place. Using process mining, it is possible to discover models that reflect what is really happening. This can be used to configure systems and to improve processes. Moreover, it is possible to measure conformance and to quantify alignment. An important enabler for process mining is the availability of event logs. In his presentation, prof. Van der Aalst will show a wide variety of real-life examples that illustrate the omnipresence of such data and the applicability of tools such as ProM.

“The State of Multi-Agent Programming” *Rafael H. Bordini (Durham, UK)*

This talk will give an overview of a particular approach to programming multi-agent systems (based on the agent platform called “Jason”) and how formal verification of systems programmed according to that approach could be done. However, this will be done very briefly, simply as an attempt to situate a wider discussion of what the general state of languages and techniques for programming multi-agent systems currently is. The talk will then use this as a basis for discussing current shortfalls and future trends in multi-agent programming and verification of multi-agent programs.

Dr. Rafael H. Bordini is Lecturer in Computer Science at the University of Durham, UK. He received a Ph.D. from the University of London (UCL) in 1999, and worked as a visiting lecturer at UFRGS (Porto Alegre, Brazil), then as a research fellow at the University of Liverpool, before joining the University of Durham. Dr. Bordini has published over 60 peer-reviewed papers in journals and conferences and is best known for his work on agent-oriented programming languages, as well as his work on model checking multi-agent systems. For further details, visit <http://www.dur.ac.uk/r.bordini>.

“Bayesian Machine Learning: theory and applications” *Tom Heskes (RUN)*

Machine learning is about learning models from data. In so-called Bayesian machine learning we build probabilistic models and use probability calculus, in particular Bayes' rule, to infer the unknown model parameters given the observed data. In my presentation I will show where this leads to by highlighting some of the applications that we work on: brain-computer interfacing (how to control devices by reading out brain activity), functional genomics (how to use functional and structural data to unravel the life cycle of the malaria parasite), and personalization of hearing aids (how to design listening experiments that reveal the preferences of individual users).

“Retrieving Entities” *Maarten de Rijke (UVA)*

Now that document retrieval has become somewhat of a commodity, the information-retrieval community is increasingly considering tasks that revolve around entities rather than documents. Examples include product search, finding answers or locations, and profiling people or organisations. In this talk I will review some recent work on entity retrieval at the University of Amsterdam. Important building blocks for this work include named entity normalization and association finding. And prominent applications that will be discussed include expert finding and online media analysis.

The talk is based on joint work with Sisay Fissaha Adafre, Leif Azzopardi, Krisztian Balog, Maarten Marx, Valentin Jijkoun, Mahboob Khalid, and Wouter Weerkamp.

Dutch Belgian Database Day 2008 (DBDBD 2008)

October 10, 2008
Namur, Belgium

The Dutch Belgian Database Day (DBDBD) is a yearly one-day workshop organized at a Belgian or Dutch university, whose general topic is database research. DBDBD invites submissions (1 page abstract) on a broad range of database and database-related topics, including but not limited to data storage and management, theoretical database issues, database performance, data mining, information retrieval, data semantics, querying, ontologies etc. Based on the submissions, the workshop will be organized in different sessions each covering a particular topic.

Participation is free for all SIKS-members (Ph.D. students, research fellows, senior research fellows and associated members).

At the DBDBD, junior researchers from the Netherlands and Belgium can present their recent results. It is an excellent opportunity to meet up with your Belgian/Dutch colleagues, and to get informed about the (recent) database-related research performed in Belgian/Dutch universities. The workshop is also open to non-Belgian/Dutch participants (presentations are in English).

The DBDBD 2008 is organized under auspices of SIKS, the Dutch research School for Information and Knowledge Systems, and the Belgian Graduate School in Computing Science (GRASCOMP). The event is sponsored by the FNRS. This year, DBDBD will be held at the Arsenal, located at the heart of the charming city of Namur (Belgium), on Friday October 10, 2008.

The workshop consists of a number of oral presentations. There are no printed proceedings. Abstracts of talks will be published on the workshop's website: <http://perso.fundp.ac.be/~pthiran/dbdbd2008/dbdbd08.htm>

TOPICS OF INTEREST

Any topic related to databases, including but not limited to: data storage and management, theoretical database issues, database performance, data mining, information retrieval, data semantics, querying, ontologies, ...

SUBMISSION

The DBDBD has a tradition of favouring presentations by junior researchers. Proposals for presentations should be made before or on

September 19, 2008. The format is a one-page pdf-document, to be sent to dbdbd08@gmail.com. Each submission should contain:

- the title of the talk;
- the name of the prospective speaker;
- his/her affiliation;
- a one-page abstract;
- if applicable: reference(s) to papers covered by the proposed presentation.

REGISTRATION AND WORKSHOP VENUE

See the workshop's website.

IMPORTANT DATES

- Submission Deadline (1 page abstract): September 19, 2008
- Notification: September 26, 2008
- Program online: September 28, 2008
- Registration deadline: October 3, 2008
- Dutch-Belgian Database Day: October 10, 2008

LOCAL ORGANIZERS

- Philippe Thiran, FUNDP
- Jef Wijsen, UMH

Workshop Image Processing for Artist Identification II

October 20-21, 2008
Van Gogh Museum, Amsterdam

Organized by TiCC, Tilburg University and the Van Gogh Museum in Cooperation with SIKS

The second workshop on Image Processing for Artist Identification aims at bringing together art-historian researchers and computer scientists that work on the analysis of paintings. During the past year, a number of challenges have been identified that are being addressed by 7 international scientific teams of researchers. Digitized reproductions of paintings by Van Gogh and related artists, made available by the Kröller-Müller museum, the Museum of Modern Art, and the Van Gogh museum, are analysed using advanced image-processing and analysis techniques. (See <http://www.digitalpaintinganalysis.org> for additional information.)

During the workshop, representatives of the teams will report the results on the challenges. In addition, a number of experts in the field present their latest results on their computer-supported analysis of paintings.

The workshop is of interest to art historians,

computer scientists, mathematicians, and cognitive scientists.

Participation to the workshop is free of charge. Due to limited capacity, there is a limit to the number of participants. Please register early to ensure your participation.

Advanced SIKS Course “Computational Intelligence”

INTRODUCTION

On October 23 and 24, 2008 the School for Information and Knowledge Systems (SIKS) will organize an Advanced Course on Computational Intelligence. 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.

Location: Conference center Woudschoten in Zeist.

SCIENTIFIC DIRECTORS

- Prof.dr. A.P.J.M. Siebes (UU)
- Dr. U. Kaymak (EUR)

PRELIMINARY PROGRAM

The program is not known yet, but may include advanced topics from:

- machine learning
- intelligent data-analysis / datamining
- neural and evolutionary computing
- adaptive / self-organizing / fuzzy systems
- probabilistic reasoning / Bayesian networks
- pattern and image recognition
- intelligent search algorithms / games

REGISTRATION

For registration you are requested to fill in the electronic form at the SIKS-site, where more details on the arrangements are available as well.

Advanced SIKS Course “Business Process Management”

INTRODUCTION

On November 6 and 7, 2008 the School for Information and Knowledge Systems (SIKS) will

organize an advanced course on “Business Process Management”. 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. Especially Ph.D. students working on the SIKS-focus “Enterprise Information Systems” are strongly encouraged to participate.

Location: Conference center Landgoed Huize Bergen in Vught.

SCIENTIFIC DIRECTORS

- Prof. dr.ir. W.M.P. van der Aalst (TU/e)
- Prof. dr. M.U. Reichert (Universität Ulm)

PROGRAM

More details on the program will be made available in due course.

Basic SIKS Course “Research Methods and Methodology for IKS”

INTRODUCTION

On November 24-26, 2008, 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 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 aforementioned literature.

COURSE COORDINATORS

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

PROGRAM

A provisional program is not available yet. More details will be made available on the SIKS-site in due course.

REGISTRATION

For registration you are kindly requested to fill in the registration form at the SIKS-website. In the conference centre 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: November 1, 2008.

First International Working Conference on Human Factors and Computational Models in Negotiation (HuCom 2008)

December 8-9, 2008
Delft, the Netherlands

<http://mmi.tudelft.nl/hucom08>

Free participation for SIKS-Ph.D. students.

IMPORTANT DATES

- October 17, 2008: Paper submissions due
- November 3, 2008: Notification of paper acceptance/rejection
- November 21, 2008: Camera-ready copies of accepted papers
- December 8-9, 2008: Working Conference on Human Factors and Computational Models in Negotiation

- December 10, 2008: Inaugural lecture Catholijn Jonkers

PUBLICATION

We are pleased to solicit original and unpublished papers for publication and presentation in the Working Conference on Human Factors and Computational Models in Negotiation (<http://mmi.tudelft.nl/hucom08>). Articles describing novel ideas and applications in all areas related to human factors and computational models in negotiation are of interest. We also invite submissions of statements of interests or position papers. Submit your paper electronically in either PDF or postscript format. Papers should not be more than 15 pages. Submission is entirely automated by a paper management tool, which is available from the main web site: <http://www.easychair.org/conferences/?conf=hucom08>.

A selection of accepted papers will be considered for publication in the *Group Decision and Negotiation Journal*.

AIMS AND SCOPE

Negotiation is a complex and sometimes emotional decision-making process aiming to reach an agreement to exchange goods or services. Although a daily activity, extensive research has shown that few people are effective negotiators. Current state of the art negotiation-support systems can help make a significant improvement in negotiation performance. In particular, when the negotiation space is well-understood such systems can make a difference, partly because machines can much better deal with the computational complexity involved. However, the negotiation space can only be properly developed if the human parties jointly explore their interests. The inherent semantic problem and the emotional issues involved make that negotiation cannot be handled by artificial intelligence alone, and a human-machine collaborative system is required. Such systems are not only to support humans in providing strategic advice but also in coping with emotions and moods in human-human interactions.

In order to develop human-machine collaborative negotiation-support systems there is a need for the development of computational models, frameworks, and experimental, user-centred and ergonomic methods that enable the engineering of negotiation-support systems. It is important for this purpose to study the role of human factors in negotiation as well as computational models to enable intelligent support for negotiation. To develop the next generation of negotiation-support systems there are still many, diverse challenges: models of

(qualitative, incomplete) preferences, preference change and strategies, preference elicitation, assessment methods for negotiation performance, learning and adaptativeness in negotiation, models of emotion and user awareness, the use and creation of domain knowledge, user interfaces for negotiation support, human-supported assessment of opponent, conflict handling styles, experimental methods.

Topics covered include but are not limited to: negotiation strategies (bidding, acceptance); argumentation for negotiation; negotiation interaction; learning in negotiation; negotiation domain knowledge; case studies; preference elicitation; qualitative preferences; incomplete preferences; ontologies for negotiation (protocols, preferences, domain knowledge); negotiation-support systems; user interfaces for negotiation-support systems; human-machine negotiation; negotiation, conflict handling, and experiments related to, e.g., consensus building; personality in negotiation (e.g., Big Five); emotions in negotiation; cultural factors in negotiation; negotiation bidding advice; negotiation conflict styles; trust in automatically generated negotiation advice; negotiation applications; e-commerce; methods and tools for negotiation tasks; design and evaluation of support systems; conflict handling styles and consensus building; HCI aspects and human factors of negotiation.

ORGANIZERS

- Willem-Paul Brinkman – Delft University of Technology, Delft, the Netherlands
- Koen Hindriks – Delft University of Technology, Delft, the Netherlands
- Dmytro Tykhonov – Delft University of Technology, Delft, the Netherlands

PROGRAM CHAIRS

- Koen Hindriks – Delft University of Technology, Delft, the Netherlands
- Catholijn Jonker – Delft University of Technology, Delft, the Netherlands
- Liz Sonenberg – The University of Melbourne, Australia

Advanced SIKS Course “Organizational Principles for IKS”

INTRODUCTION

On February 16 and 17, 2009 the School for Information and Knowledge Systems (SIKS) will organize an advanced course on “Organizational Principles for Information and Knowledge Systems”. The course takes two days, will be given

in English and is part of the 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. Especially Ph.D. students working on the SIKS-focus “Agent Systems” and “Enterprise Information Systems” are strongly encouraged to participate.

Organization concepts and models are increasingly being adopted for the design and specification of complex computational systems. As systems grow to include hundreds or thousands of components, it is necessary to move from an agent-centric view of coordination and control to an organization-centric one. Furthermore, open environments pose new demands on traditional architectures. These demands include the integration of organizational and individual perspectives and the dynamic adaptation of models to organizational and environmental changes. Organizational design plays a critical role in the development of larger and more complex (information) systems.

On the other hand, human organizations can be seen as a set of entities regulated by mechanisms of social order and created by more or less autonomous actors to achieve common goals. Organization supports an individual (be it a person, a computer system, or an institution) to recognize its role, and the roles of others, in accomplishing these collective goals. Organizational Theory sees organizations as instruments of purpose, as they are seen as coordinated by intentions and goals. Agent models are therefore increasingly used to model, simulate and support human organizations.

In this advanced SIKS course, we will discuss these two perspectives and present different approaches to the study of organizations both from the perspective of social science and management sciences, as from the perspective of information science and artificial intelligence. Speakers will cover a wide range of topics, and we will have an hands-on session on the design of organization models.

Location: Conference Center Woudschoten, Zeist

Date: February 16-17, 2009

Scientific Director: Dr. Virginia Dignum (UU)

PROGRAM

The program is not available yet, but the course will cover the following subjects:

- Fundamentals of Organization Theory
- Structural and normative dimensions of organization
- Modeling actors in the organization
- Work practice vs. Work process
- Organizational dynamics
- Organizational learning
- Social simulation
- Social networks
- Design and analysis of organizational models using OperettA (hands-on tutorial)

REGISTRATION

Details on registration will be made available later this year.

ANNOUNCEMENTS

Call for Participation

BNAIC 2008

October 30-31, 2008
Bad Boekelo

The 20th Belgian-Netherlands Conference on Artificial Intelligence (BNAIC 2008) will be organised by the University of Twente/HMI under the auspices of the Belgium-Netherlands Association for Artificial Intelligence (BNVKI) and the Dutch Research School for Information and Knowledge Systems (SIKS). BNAIC 2008 will be held on Thursday 30th and Friday 31st of October 2008 in Bad Boekelo, near Enschede, in the Netherlands.

During BNAIC 2008 there will be invited talks by Ruth Aylett (Heriot-Watt University, Edinburgh, UK) on AI and virtual storytelling and by Wolfgang Wahlster (DFKI, Saarbrücken, Germany) on anthropomorphic interfaces for the Internet of Things. BNAIC 2008 is expecting 64 oral presentations, 25 poster presentations and 11 demos. The presentations are scheduled in sessions on:

- Games & Entertainment
- Human Behavior Analysis
- Intelligent Agents & MAS
- Knowledge Discovery & Data Mining
- Machine Learning
- Logic & Logic Programming
- Applications

In the closing session the BNAIC 'Best Paper' awards will be announced and KION, the association of Dutch University programmes in Artificial Intelligence, will announce the annual award for the best Master's Thesis.

TENTATIVE PROGRAMME

Day 1, Thursday, October 30, 2008

- 10.15 Opening
- 10.30 **Invited Speaker:** Ruth Aylett (Heriot-Watt University, Edinburgh, UK). *Title to be announced*
- 11.30 Coffee
- 11.45 Session *Human Behavior Analysis I*
- Human Gesture Recognition using Sparse B-spline Polynomial Representations; *Antonios Oikonomopoulos, Maja Pantic and Ioannis Patras*
 - A Hybrid Approach to Sign Language Recognition; *Jeroen Frederik Lichtenauer, Emile Hendriks and Marcel Reinders*
- Session *Knowledge Discovery & Data Mining I*
- Topic Detection by Clustering Keywords; *Christian Wartena and Rogier Brussee*
 - Temporal Extrapolation within a Static Clustering; *Tim Cocx, Walter Kusters and Jeroen Laros*
- Session *Intelligent Agents & MAS I*
- Individualism and Collectivism in Trade Agents; *Gert Jan Hofstede, Catholijn M. Jonker and Tim Verwaart*
 - Of Mechanism Design and Multiagent Planning; *Roman Van Der Krogt, Mathijs De Weerd and Yingqian Zhang*
- 12.45 Lunch, posters, demo's
- 14.15 Session *Human Behavior Analysis II*
- A Probabilistic Model for Generating Realistic Lip Movements from Speech; *Gwenn Englebienne, Magnus Rattray and Tim F. Cootes*
 - Combined Support Vector Machines and Hidden Markov Models for Modeling Facial Action Temporal Dynamics; *Michel F. Valstar and Maja Pantic*
 - Design and Validation of HABTA: Human Attention-Based Task Allocator; *Peter-Paul van Maanen, Lisette de Koning and Kees van Dongen*
 - Audiovisual Laughter Detection Based on Temporal Features; *Stavros Petridis and Maja Pantic*

Session *Knowledge Discovery & Data Mining II*

- Visualizing Co-occurrence of Self-Optimizing Fragment Groups; *Edgar H. de Graaf and Walter A. Kusters*
- Effects of Goal-Oriented Search Suggestions; *James Mostert and Vera Hollink*
- Semi-Automatic Ontology Extension in the Maritime Domain; *Gerben K.D. de Vries, Veronique Malaise, Maarten van Someren, Pieter Adriaans and Guus Schreiber*
- Maximizing Classifier Utility for a Given Accuracy; *Wessel Kraaij, Stephan Raaijmakers and Paul Elzinga*

Session *Intelligent Agents & MAS II*

- Decentralized Learning in Markov Games; *Peter Vrancx, Katja Verbeeck and Ann Nowé*
- Actor-Agent based Train Driver Rescheduling; *Erwin J.W. Abbink, David G.A. Mobach, Pieter J. Fioole, Leo G. Kroon, Niek J.E. Wijngaards and Eddy H.T. van der Heijden*
- Agents Preferences in Decentralized Task Allocation; *Mark Hoogendoorn and Maria L. Gini*
- Evolutionary Dynamics for Designing Multi-Period Auctions; *Tomas Klos and Gerrit Jan Van Ahee*

16.00 Coffee

16.30 Session *Machine Learning I*

- Improving People Search Using Query Expansion: How Friends Help to Find People; *Thomas Mensink and Jakob Verbeeck*
- Evolving Fixed-parameter Tractable Algorithms; *Stefan A. van der Meer, Iris Van Rooij and Ida Sprinkhuizen-Kuyper*
- Polynomial Distinguishability of Timed Automata; *Sicco Verwer, Mathijs de Weerd and Cees Witteveen*
- Imitation and Mirror Neurons: An Evolutionary Robotics Model; *Eelke Spaak and Pim F.G. Haselager*

Session *Applications I*

- The Importance of Link Evidence in Wikipedia; *Jaap Kamps and Marijn Koolen*
- Determining Resource Needs of Autonomous Agents in Decoupled Plans; *Jasper Oosterman, Remco Ravenhorst, Cees Witteveen and Pim van Leeuwen*

- Decentralized Online Scheduling of Combination-Appointments in Hospitals; *Ivan Vermeulen, Sander Bohte, Sylvia Elkhuisen, Piet Bakker and Han La Poutré*

- Reconfiguration Management of Crisis Management Services; *J. B. van Veelen, S. van Splunter, N. J. E. Wijngaards and F. M. T. Brazier*

Session *Intelligent Agents & MAS III*

- Opponent Modelling in Automated Multi-Issue Negotiation Using Bayesian Learning; *Koen V. Hindriks and Dmytro Tykhonov*
- Collective Intelligent Wireless Sensor Networks; *Mihail Mihaylov, Ann Nowé and Karl Tuyls*
- Agent Performance in Vehicle Routing when the Only Thing Certain is Uncertainty; *Tamas Máhr, Jordan Srour, Mathijs de Weerd and Rob Zuidwijk*
- Monitoring and Reputation Mechanisms for Service Level Agreements; *Omer Rana, Martijn Warnier, Thomas B. Quillinan and Frances M.T. Brazier*

18.15 End of Day 1

Day 2, Friday, October 31, 2008

9.00 **Invited Speaker:** Wolfgang Wahlster (DFKI, Saarbrücken, Germany). *Anthropomorphic Interfaces for the Internet of Things*

10.00 Coffee

10.15 Session *Machine Learning II*

- A Neural Network Based Dutch Part of Speech Tagger; *Mannes Poel, Egwin Boschman and Rieks op den Akker*
- A Tractable Hybrid DDN-POMDP Approach to Affective Dialogue Modeling for Probabilistic Frame-based Dialogue Systems; *Trung H. Bui, Mannes Poel, Anton Nijholt and Job Zwiers*
- Authorship Attribution and Verification with Many Authors and Limited Data; *Kim Luyckx and Walter Daelemans*

Session *Logic & Logic Programming*

- Towards an Argument Game for Stable Semantics; *Yining Wu and Martin Caminada*
- From Probabilistic Horn Logic to Chain Logic; *Nivea Ferreira, Arjen Hommersom and Peter Lucas*
- Mental State Abduction of BDI-Based Agents; *Michal Sindlar, Mehdi Dastani, Frank Dignum and John-Jules Meyer*

- Session *Intelligent Agents & MAS IV*
- OperA and Brahms: a symphony? Integrating Organizational and Emergent Views on Agent-Based Modeling; *Bart-Jan van Putten, Virginia Dignum, Maarten Sierhuis and Shawn Wolfe*
 - The Dynamics of Human Behaviour in Poker; *Marc Ponsen, Karl Tuyls, Steven de Jong, Jan Ramon, Tom Croonenborghs and Kurt Driessens*
 - Discovering the Game in Auctions; *Michael Kaisers, Karl Tuyls and Frank Thuijsman*
- 11.30 Coffee
- 11.45 Session *Games & Entertainment I*
- Adaptive Intelligence for Turn-based Strategy Games; *Maurice Bergsma and Pieter Spronck*
 - Rapidly Adapting Game AI; *Sander Bakkes, Pieter Spronck and Jaap van den Herik*
 - Modeling Agent Adaptation in Games; *Joost Westra, Frank Dignum and Virginia Dignum*
- Session *Machine Learning III*
- Loopy Propagation: the Posterior Error at Convergence Nodes; *Janneke H. Bolt and Linda C. van der Gaag*
 - Mixed-Integer Bayesian Optimization Utilizing A-Priori Knowledge on Parameter Dependences; *Michael T. M. Emmerich, Anyi Zhang, Rui Li, Ildiko Flesch and Peter Lucas*
 - Combining Expert Advice Efficiently; *Wouter M. Koolen and Steven De Rooij*
- Session *Intelligent Agents & MAS V*
- Stigmergic Landmarks Lead the Way; *Nyree P.P.M. Lemmens and Karl Tuyls*
 - Attack Relations among Dynamic Coalitions; *Guido Boella, Leendert van der Torre and Serena Villata*
 - Autonomous Scheduling with Unbounded and Bounded Agents; *Chetan Yadati Narasimha, Cees Witteveen, Yingqian Zhang, Mengxiao Wu and Han La Poutré*
- 13.00 Lunch, posters
- 13.15 BNVKI Meeting in Linde
- 14.00 Session *Games & Entertainment II*
- Single-Player Monte-Carlo Tree Search; *Maarten P.D. Schadd, Mark H.M. Winands, H. Jaap van den Herik, Guillaume M.J-B. Chaslot and Jos W.H.M. Uiterwijk*
 - Monte-Carlo Tree Search Solver; *Mark H.M. Winands, Yngvi Björnsson and Jahn-Takeshi Saito*
 - Hierarchical Planning and Learning for Automatic Solving of Sokoban Problems; *Jean-Noël Demaret, Francois Van Lishout and Pascal Gribomont*
- Session *KR, KM & KBS*
- An Empirical Study of Instance-based Ontology Matching; *Antoine Isaac, Lourens van der Meij, Stefan Schlobach and Shenghui Wang*
 - The tOWL Temporal Web Ontology Language; *Viorel Milea, Flavius Frasincar and Uzay Kaymak*
 - Decentralized Performance-aware Reconfiguration of Complex Service Configurations; *Sander van Splunter, Pieter van Langen and Frances Brazier*
- Session *Intelligent Agents & MAS VI*
- A Priced Options Mechanism to Solve the Exposure Problem in Sequential Auctions; *Lonneke Mous, Valentin Robu and Han La Poutré*
 - Agent-based Patient Admission Scheduling in Hospitals; *Anke K. Hutzschenreuter, Peter A.N. Bosman, Ilona Blonk-Altena, Jan van Aarle and Han La Poutré*
 - Beating Cheating: Dealing with Collusion in the Non-Iterated Prisoner's Dilemma; *Nicolas Honing, Tomas Kozelek and Martijn C. Schut*
- 15.15 Coffee
- 15.30 Session *Vision*
- Creating a Bird-Eye View Map using an Omnidirectional Camera; *Steven Roebert, Tijn Schmits and Arnoud Visser*
 - Paying Attention to Symmetry; *Gert Kootstra, Arco Nederveen and Bart de Boer*
- Session *Reasoning*
- P3C: A New Algorithm for the Simple Temporal Problem; *Léon Planken, Roman van der Krogt and Mathijs de Weerd*
 - An Architecture for Peer-to-Peer Reasoning; *George Anadiotis, Spyros Kotoulas and Ronny Siebes*
- Session *Applications II*
- Improved Situation Awareness for Public Safety Workers while Avoiding Information Overload; *Marc de Lignie, BeiBei Hu and Niek Wijngaards*
 - Engineering Large-scale Distributed Auctions; *Peter Gradwell, Michel Oey, Reinier Timmer, Frances Brazier and Julian Padget*
- 16.30 Closing session

POSTERS

- Document-oriented Lookup Index for RDF data; *Eyal Oren*
- An Algorithm for Semi-Stable Semantics; *Martin W.A. Caminada*
- Categorizing Children: Automated Text Classification of CHILDES files; *Rob Opsomer, Petr Knoth, Freek Van Polen, Jantine Trapman and Marco Wiering*
- Lambek-Grishin Calculus Extended to Connectives of Arbitrary Arity; *Matthijs Melissen*
- Metrics for Mining Multisets; *Jeroen F. J. Laros and Walter A. Kosters*
- Automatic Thesaurus Generation using Co-occurrence; *Rogier Brussee and Christian Wartena*
- A Cognitive Model for the Generation and Explanation of Behavior in Virtual Training; *Maike Harbers, Karel van den Bosch, Frank Dignum and John-Jules Meyer*
- Exploring Heuristic Action Selection in Agent Programming; *Koen V. Hindriks, Catholijn M. Jonker and Wouter Pasman*
- The Influence of Physical Appearance on a Fair Share; *Steven de Jong, Rob van de Ven and Karl Tuyls*
- Linguistic Relevance in Modal Logic; *Davide Grossi*
- Organized Anonymous Agents; *Martijn Warnier and Frances Brazier*
- Enhancing the Performance of Maximum-Likelihood Gaussian EDAs Using Anticipated Mean Shift; *Peter A.N. Bosman, Jörn Grahl and Dirk Thierens*
- The Effects of Cooperative Agent Behavior on Human Cooperativeness; *Arlette van Wissen, Jurriaan van Diggelen and Virginia Dignum*
- Modeling the Dynamics of Mood and Depression; *Fiemke Both, Mark Hoogendoorn, Michel Klein and Jan Treur*
- Distribute the Selfish Ambitions; *Xiaoyu Mao, Nico Roos and Alfons Salden*
- Subjective Machine Classifiers; *Dennis Reidsma and Rieks op den Akker*
- The Virtual Storyteller: Story Generation by Simulation; *Ivo Swartjes and Mariët Theune*
- Closing the Information Loop; *Jan Willem Marck and Sicco Pier van Gosliga*
- Online Collaborative Multi-Agent Reinforcement Learning by Transfer of Abstract Trajectories; *Maarten van Someren, Martin Pool and Sanne Korzec*
- Self-Organizing Mobile Surveillance Security Networks; *Duco N. Ferro and Alfons H. Salden*
- Temporal Interaction between an Artificial Orchestra Conductor and Human Musicians; *Dennis Reidsma and Anton Nijholt*
- Don't Give Yourself Away: Cooperation Revisited; *Anton Nijholt*
- Approximating Pareto Fronts by Maximizing the S-Metric with an SMS-EMOA/Gradient Hybrid; *Michael T.M. Emmerich, Andre H. Deutz and Nicola Beume*
- A Modern Turing Test - Bot Detection in MMORPGs; *Adam Cornelissen and Franc Grootjen*
- Deep Belief Networks for Dimensionality Reduction; *Athanasios K. Noulas and Ben J.A. Krose*

For details about registration consult <http://hmi.ewi.utwente.nl/bnaic2008>.

Program Chairs of BNAIC 2008 are Anton Nijholt (University of Twente) and Maja Pantic (Imperial College London & University of Twente).

CONFERENCES, SYMPOSIA WORKSHOPS

SEPTEMBER 1-3, 2008

CSN 2008: the Seventh IASTED International Conference on Communication Systems and Networks, Palma de Mallorca, Spain.
<http://www.iasted.org/conferences/submit-629.html>

SEPTEMBER 3-7, 2008

DECOS: International Conference DEscribing COMplex Systems, Zadar, Croatia.
<http://www.conf-decos.net>

SEPTEMBER 4-6, 2008

AIMSA 2008: the 13th International Conference on Artificial Intelligence: Methodology, Systems, Applications, AI@work, Varna, Bulgaria.
<http://www.aimsaconference.org>

SEPTEMBER 10-12, 2008

HIS 2008: the 8th Hybrid Intelligent Systems Conference, Technical University of Catalonia, UPC Barcelona, Spain.
<http://his2008.lsi.upc.edu>

SEPTEMBER 10-12, 2008

DIMEA 2008: 3rd ACM International Conference on Digital Interactive Media in Entertainment and Arts. Athens Information Technology (AIT). Athens, Greece.

<http://www.dimea2008.org/>

SEPTEMBER 16, 2008

ECAG'08: Workshop on Facial and Bodily Expressions for Control and Adaptation of Games; and FG2008: the 2008 IEEE International Conference on Automatic Face and Gesture Recognition, Amsterdam, the Netherlands.

<http://hmi.ewi.utwente.nl/conference/ECAG08>
<http://www.fg2008.nl>

SEPTEMBER 18-20, 2008

IDC'2008: 2nd International Symposium on Intelligent Distributed Computing, Catania, Italy.
<http://idc08.diit.unict.it>

SEPTEMBER 21-25, 2008

CDVE2008: the 5th International Conference on Cooperative Design, Visualization and Engineering, Mallorca, Spain.
<http://www.cdve.org>

SEPTEMBER 23, 2008

KI 2008 Conference; 3rd Workshop: Emotion and Computing – current research and future impact. Kaiserslautern, Germany.
<http://www.emotion-and-computing.de>

SEPTEMBER 25-27, 2008

7th Annual International Conference on Entertainment Computing (ICEC 2008). Pittsburgh, PA, USA.
<http://www.etc.cmu.edu/icec2008/>

SEPTEMBER 29 - OCTOBER 4, 2008

UBICOMM 2008: the Second International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies. Valencia, Spain
<http://www.iaria.org/conferences2008/UBICOMM08.html> and <http://www.iaria.org/conferences2008/CfPUBICOMM08.html>

OCTOBER 12-15, 2008

2008 IEEE International Conference on Systems, Man, and Cybernetics. Suntec Singapore International Convention and Exhibition Centre, Singapore.
<http://www.smc2008.org>

OCTOBER 20-22, 2008

IMCSIT 2008: International Multiconference on Computer Science and Information Technology. Hotel Golebiewski, Wisla, Poland
<http://www.imcsit.org>

OCTOBER 20-24, 2008

SASO 2008: 2nd International Conference on Self-adaptive and Self-organizing Systems. Venice, Italy.

www.saso-conference.org

OCTOBER 22-24, 2008

AIIDE: the Fourth Conference on Artificial Intelligence and Interactive Digital Entertainment, Stanford University, Palo Alto, CA, USA.
www.aiide.org

OCTOBER 26-30, 2008

ISWC2008: 7th International Semantic Web Conference, Karlsruhe, Germany.
<http://iswc2008.semanticweb.org>

OCTOBER 27-31, 2008

CSTST'08: the Fifth IEEE International Conference on Soft Computing as Transdisciplinary Science and Technology. University of Cergy Pontoise, Cergy-Pontoise/Paris, France.
<http://sigappfr.acm.org/cstst08/>

OCTOBER 30-31, 2008

BNAIC 2008: the 20th Belgian-Dutch Conference on Artificial Intelligence. Bad Boekelo (near Enschede), the Netherlands.
<http://hmi.ewi.utwente.nl/bnaic2008>

DECEMBER 10-13, 2008

JURIX 2008: the 21st International Conference on Legal Knowledge and Information Systems. Florence, Italy.
<http://www.ittig.cnr.it/jurix08>

FEBRUARY 2-3, 2009

The 9th Dutch-Belgian Information Retrieval Workshop (DIR). Enschede, The Netherlands.
<http://dir2009.cs.utwente.nl>

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