

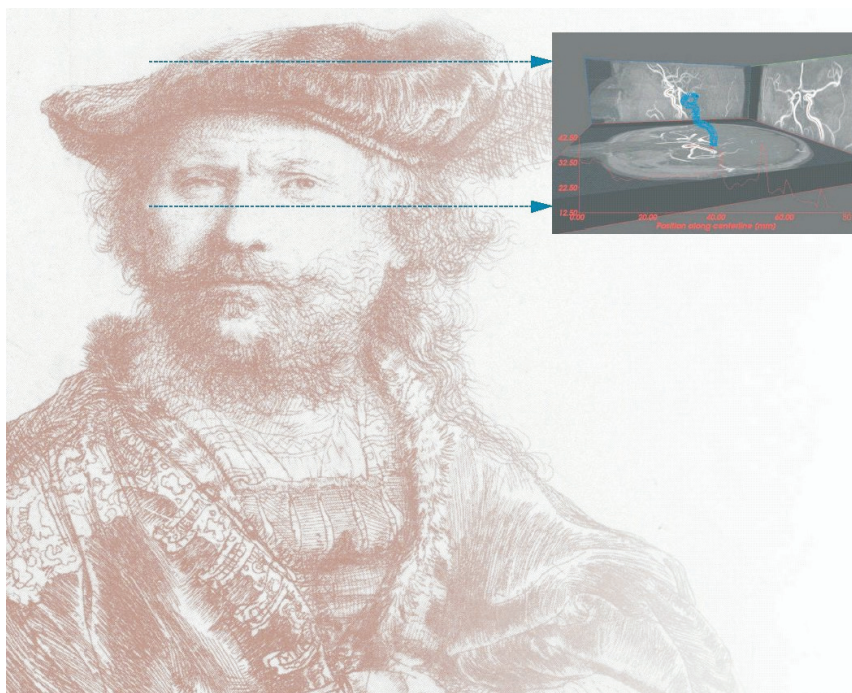
# NEWSLETTER



*April 2003*

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**ToKeN2000 symposium**

**Knowledge representation for  
legislation with UML**

**Intelligent methods in  
marketing**

*News from the Belgium-  
Netherlands Association  
for Artificial Intelligence*

# The Digital Durability of AI

*Editor-in-chief*

1086 AD: The *Domesday book* is offered to its commissioner, William the Conqueror. It provides a detailed record of the landowners in England and their possessions, showing William the value of his kingdom. The book consists of two volumes in Latin. Even today the book is still accessible, also in various editions in English.

1986 AD: Celebrating the 900<sup>th</sup> anniversary of the Domesday book, the BBC starts a project to create a contemporary Domesday book: a multimedia database compiled by schools around the country describing British every-day life in 1986. Unfortunately the project turns out to be technically too demanding for its time: there are no usable multimedia standards and therefore dedicated hardware and software are used. All the data is stored on two special videodiscs.

2002-2003 AD: The special hardware to view the BBC Domesday book is no longer available. After several dramatic stories in the press, the Universities of Michigan (USA) and Leeds (UK) start a project to revive the software by emulating the old hardware. They succeed in demonstrating the emulation of part of the software, but funds are lacking to complete the project. Even if the project would have been finished, unresolved copyright issues would prohibit the publication of the BBC Domesday book on the Web.

The Domesday project is a textbook case of the problem of digital preservation. Closer to home, we have the problem of preserving the BNVKI Newsletter. Following the results of the BNVKI survey (see BNVKI Newsletter 19:6), an archive of previous Newsletters was put on the BNVKI Web site. Putting the PDF files on the Web is straightforward. (That is, if all files are still available. In our case it turned out that quite a few files are missing). The real problems arise with dynamic content, such as software. For instance, how well is the AI software heritage preserved? Your editor-in-chief conducted a small search for classical AI software:

- ELIZA: The program dates from 1966 and was written by Joseph Weizenbaum. Many downloads are around, but it is often unclear whether an implementation is faithful to the original or if the rules have been changed.
- MYCIN: This rule-based diagnostic system was developed during the 1970s at Stanford. A download is available, but the Web page that links to this implementation refers to it as “crude”.
- SHRDLU: This natural language understanding program was written in 1972 by Terry Winograd. A download is available that seems to be the original implementation. However, it was written in MACLISP, which runs on the now antique PDP-10 computer.
- SOAR: This cognitive architecture stems from the late eighties and was developed by Rosenbloom, Laird, and Newell. The software is still in use and has evolved over the years. However, the original seems not to be available anymore.

From this small survey two observations emerge: (1) Fortunately, software may be so popular that new implementations are made. The downside is that these implementations may not remain true to the original. (2) The software can only be run on obsolete hardware and software. Hence, to see and use the running software either an emulator is required or a visit to a computer museum (such as the Universiteit van Amsterdam Computer Museum).

Therefore I advise BNVKI members who have developed AI software that they deem important to make regular ports to modern hardware and software. Even better, to make their software as long-living as the original Domesday book, the software must be so compelling that also future generations will keep making new ports.

**BBC Domesbook restauration:** <http://www.si.umich.edu/CAMILEON/>

**BNVKI Newsletter archive:** <http://www.cs.unimaas.nl/~bnvki/archive/>

**Eliza:** <http://www.uwec.edu/jerzdg/orr/articles/IF/canon/Eliza.htm>

**Mycin:** <ftp://ftp.cs.indiana.edu/pub/scheme-repository/doc/lit/paip>

**AI Classics (e.g., Shrdlu):** <http://www-2.cs.cmu.edu/afs/cs/project/ai-repository/ai/areas/classics/0.html>

**SOAR:** <http://redefi.ist.psu.edu/soar-faq/soar-faq.html>

**UvA Computer Museum:** <http://www.science.uva.nl/faculteit/museum/>

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*Photos by Dick van der Toorn en Bert de Smidt van Media Royale Ontwerpbureau (pages 32-34)*

## BNVKI-Board News

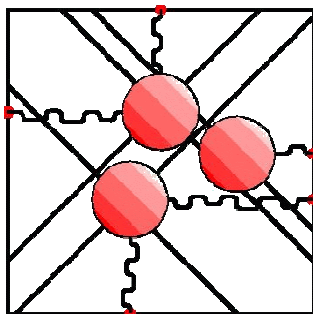
*Han La Poutré*

The Dutch and Belgian AI research community has been growing steadily in the last years. This appeared in a good research output as well as an increasing research community, with a substantial size. So, we can actually say that the Belgian/Dutch AI community is doing pretty well. Something we can be happy about. But sometimes, members of a growing community can loose touch, if no sparkling communication or interaction occurs.

Fortunately, our community is in rich possession of its own conference, the BNAIC. The BNAIC has grown into a sizable conference, and is currently the place to be in the Netherlands and Belgium, for meeting all our old and new AI colleagues, coming from the various universities, research schools, companies, and more. There, researchers and other participants can enjoy talking to them about the newest developments in the field, at the universities, and in the companies.

In the last BNAIC in Leuven, it was decided that the next BNAIC will be organised by the Universiteit Nijmegen, in particular by SNN, the Dutch Foundation for Neural Networks. The BNVKI board had visited the university already last October, to discuss the upcoming BNAIC with the intended organisers. The organisers appeared to be very enthusiastic, and the Nijmegen location appeared as excellent and charming. Putting this together with the fact that the BNAIC conference sequence has been very successful until now, we thus got the ingredients for an exciting new one, to be held this autumn.

In this Newsletter, the call for papers for the BNAIC is included, so, everything is now put in position to again make the upcoming BNAIC into a big success. I like to invite everyone to submit his/her best papers, so that we together make again a great conference out of it, showing all our Dutch and Belgian fellow researchers what we are capable of, and again having something to talk about!



## ToKeN2000 SYMPOSIUM

*Christianne Klödtz*  
*NWO*

The Netherlands Organisation for Scientific Research (NWO) research programme ToKeN2000 (Accessibility and Knowledge Dissemination in the Netherlands 2000) focuses on the accessibility of knowledge systems and on knowledge dissemination. The programme was launched in 1999 and is expected to continue until 2008.

In ToKeN2000 cognitive scientists and computer scientists are working together on solutions to fundamental problems in the interaction of knowledge and information systems on the one hand and human users of these systems on the other. The aim of the programme is to realise a broad use and a broad accessibility of diverse types of information and in addition to this to accelerate knowledge development. ToKeN2000 has three application areas:

- Culture and education (the cultural legacy)
- Police and justice
- Healthcare sector.

On February 21, 2003 a symposium was held in the auditorium of TU Delft for all of the researchers involved in the programme and the potential users, in order to promote the mutual exchange of knowledge and the interaction between the two groups. About 100 people attended the symposium.

### INTERACTION WITH USERS

Prof. H.J. van den Herik (Universiteit Maastricht), chair of the programme committee, opened the symposium and emphasised the main purpose of ToKeN2000: making information more accessible within the three application areas formulated in



*Jaap van den Herik.*

ToKeN2000. Prof. L.A.A.M. Coolen, chair of the users committee ToKeN2000, also emphasised that the research results of ToKeN2000 must meet the need of potential users and that the knowledge acquired must be effectively transferred to them.

A key subject of ToKeN2000 is the interaction between humans on the one hand and information systems on the other. The choice of the keynote speaker, Dipl.-Ing. Eric Thelen from Philips Research (Aachen, Germany), was based on these principles. In his presentation he discussed the trends and challenges in the human-machine interaction and emphasised the importance of this interaction for a good accessibility of knowledge and information systems. According to Thelen, innovative human-machine interaction is particularly necessary in situations where different functionalities are made available within an interactive system. Using a number of examples, Thelen showed the trends, possibilities and challenges for the human-machine interaction, especially in the area of language technology.



*Eric Thelen.*

Next, the project leaders from ToKeN2000 gave presentations about the developments in their projects.

#### **PROJECT OVERVIEWS**

In his presentation, Prof. L.R.B. Schomaker (Rijksuniversiteit Groningen) from the project <sup>12</sup>RP emphasised the role of the user in knowledge dissemination. The aim of the <sup>12</sup>RP project is to find and present information intelligently in multimedia databases. It is important for the researchers to find out the objectives of users of the search systems. With this information the researchers can gear the systems to these objectives.



*Lambert Schomaker.*

This project provides challenges for computer scientists as well as specialists in the areas of artificial intelligence, cognition and language.

Prof. E.O. Postma (Universiteit Maastricht) from the EIDETIC project dealt with the automatic recognition of image content from digital images. At present, this automatic recognition is not reliable enough for images to be efficiently searched and recognised, whereas the quantity of electronically available visual data is continually increasing. In his presentation, Postma described the possibilities of content-based search techniques and gave impressive examples of the initial results from this research.

Prof. J.H.C. Reiber (Leids Universitair Medisch Centrum), project leader of DIME, concluded the morning session. In the DIME project, software is being developed to calculate the anatomy of blood vessels, to simulate the blood flow through the vessels and to determine the effect of bypasses. The highly illustrative examples impressed the audience. For example, Reiber showed how modern image processing techniques can reconstruct and visualise anatomical structures in 3D. These 3D images can provide support to medical specialists in the decisions they take.

Lunch was served while the 'Staring kwartet' string quartet played works from Mozart. After the lunch an extensive poster session took place. Researchers from ToKeN2000 presented their project plans and research results in a total of 23 posters.

Dr. P.J. Toussaint (Leids Universitair Medisch Centrum) opened the afternoon session with a presentation on his NARRATOR project. In this project an Internet-based dialogue system is being developed that enables patients with a disease or disorder to exchange their personal experiences with people who have been, or still are, in a health situation similar to their own. Researchers are

investigating the requirements an information system must satisfy to be able to use information stored in a narrative form. The NARRATOR project intends to realise two specific applications: a 'Breast clinic' for coordinating the care of patients with breast cancer and an information centre for geriatric care.

In his presentation, Dr. M.W. van Someren (Universiteit van Amsterdam) from the DUMPERS project described research into adaptive websites and personalised recommendation systems. The aim of the project is to support website users in their search on the Internet, by allowing the computer to make user-specific suggestions. This allows user navigation to be increasingly refined. The previously mentioned NARRATOR project serves as a test environment and source of inspiration for the DUMPERS project.

Dr. C.N.J. de Vey Mestdag (Rijksuniversiteit Groningen) from the recently started ANITA project, drew attention to the fact that the increasing exchange of information between the government, police and judiciary is producing legal as well as technical problems. In view of the nature of these problems (for example, different interests and the distribution of information requesters) a solution based on agent technology has been chosen in order to facilitate a reliable exchange of data between public servants. ANITA focuses on the legal problems with respect to the rights and duties concerning the collection and processing of data used for certain enquiries.

## CLOSING

At the end of the day Prof. J.H.M. Zwetsloot-Schonk (Leids Universitair Medisch Centrum) presented the new ToKeN2000 brochure to the audience. This richly illustrated brochure clearly presents the objectives of the ToKeN2000 programme, the current ToKeN2000 research and the initial research results. Also the winners of the poster competition were announced. Symposium participants had made their nominations by means of a survey. The winners were the researchers from the projects 'CHIME - Cultural Heritage in an Interactive Multimedia Environment' and 'AUTHENTIC - Knowledge discovery and disclosure for visual art: authentication and dating of graphic art and paintings'.

Further information on ToKeN2000 and about the symposium can be found at [www.nwo.nl/token2000](http://www.nwo.nl/token2000). If you would like to

receive a copy of the ToKeN2000 brochure, please send an e-mail to [token2000@nwo.nl](mailto:token2000@nwo.nl).


### Knowledge Discovery and Disclosure for Visual Art

*J. Deac, J.C.A. van der Lubbe, E. Backer*

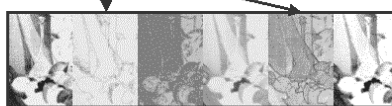
Knowledge discovery and disclosure for visual art: authentication and dating of graphic art and paintings

**PICTOLOGY, Van Dantzig, 1953 (Feature Extraction, Image Processing Toolbox):**

transforming the visual pictorial characteristic elements into measurable identities in the digitised image domain in such a way that the human art expert is still capable to perform his/her authenticity analysis.



Leo Gestel (1891-1941)      Leo Gestel?




**DATA MINING (Rules, Relations between Features):**

induce low-level, intermediate-level and high-level concepts, models and associations that are understandable and explainable by human experts.

strokes, lines, colours → contrast, tone, texture, contour, planes → style, rhythm, subject, composition

Cooperation: Van Gogh Museum, Kunsthuis Rotterdam, Museum Kranenburg Bergen, Christie's Amsterdam, Netherlands Institute for Cultural Heritage Rijswijk, Netherlands Institute for Art History Den Haag

Information: Dr. J.C.A. van der Lubbe, [j.c.a.vanderlubbe@fa.tue.nl](mailto:j.c.a.vanderlubbe@fa.tue.nl); E. Backer, [e.backer@fa.tue.nl](mailto:e.backer@fa.tue.nl)




Authentic project 634.000.015

**TU Delft I.C.T. NWO ToKeN2000**

*One of the winning posters: the Authentic project.*

### Cultural Heritage in an Interactive Multimedia Environment (CHIME)

The goal of the CHIME project is to investigate the use of semantic models for tailoring the presentation of cultural information extracted from existing repositories to different types of users.



**Specific research questions to be tackled are:**

- At which level of granularity do users need to be modelled?
- Which characteristics of a user need to be modelled in order to facilitate gathering, retrieval and presentation of information?
- How should current Semantic Web technology be extended to make user, domain and presentation-specific ontologies applicable for describing multimedia content?

**Storm In Art**



To see a perfect storm - a tempest that may happen only once in a century - a sea-master created by no race a combination of factors that it could not possibly have been worse.

Swelling waves the stormies high and winds of 110 miles an hour, the storm whipped the sea to uncontrollable levels few people in Dutch have ever witnessed.

Principal investigator: prof. dr. Lynda Hardman

Project partners:



ToKeN2000 Project 634.000.011

*One of the winning posters: the CHIME project.*

## First International Workshop on Formal Approaches to Multi-Agent Systems (FAMAS'03)

Huib Aldewereld  
CS, Universiteit Utrecht

In the recent years multi-agents systems have become a key technology for software development. Therefore it is not really very strange that one of the satellite events of the ETAPS 2003 conference was totally devoted to multi-agent systems. It was the first international workshop in a hopefully long series of yearly-repeated workshops known as Formal Approaches to Multi-Agent Systems, or FAMAS.

The workshop itself proved to be a diverse collection of presentations by offering topics on various subjects in multi-agent systems research. The topics of the workshop ranged from the issues of logics for multi-agent systems and formal methods for verification to formal approaches for cooperation, multi-agent planning, communication, coordination, negotiation, games and reasoning under uncertainty in a distributed environment.

### INVITED LECTURES

The day started with a talk of the invited speaker Wojtek Penczek on *Bounded versus Unbounded Model Checking for Interpreted Systems*, describing the complex ideas of his work on model checking within epistemic and temporal based multi-agent systems. Although very complex, his talk presented an interesting approach towards the formal verification of multi-agent systems.

The second talk of the day was by Onn Shehory on *Coalition Formation: Towards Feasible Solutions*, in which he described his ideas on team formation in order to cooperatively solve presented problems. He showed us some result of his proposed system, in which agents themselves decide whether to form a coalition, or join/leave one to achieve their own goals. By tweaking some of the parameters he showed that it is possible to have agents form large coalitions within a reasonable amount of time.

### TEAMWORK

After the first coffee break the first session of presented papers started, on the subject of teamwork. My own talk on *Rational Teams: Logical Aspects of Multi-Agent Systems* was the first of this session. In this talk I presented a proposed extension to the KARO agent-framework

in order to make it able to handle team-based multi-agent systems.

The second talk of the session on teamwork was by Barbara Dunin-Kępicz, who organized the workshop in cooperation with Rineke Verbrugge, titled *A Tuning Machine for Collective Commitments*, in which she presented formal aspects of individual, social and collective motivational attitudes. Building strongly on work by Castelfranchi, she also discussed some of the aspects of team-awareness and how their notion of team-awareness is formalized in their agent-framework.

The last talk of this session was by Frederic Mark on *Modeling Multi-Agent Plans with Hybrid Automata*, in which he presented his way of dealing with planning in teams of agents. The main focus of the approach was on the fact that their system can model different clocks evolving at different speeds, in order to make the agents more reactive to the environment and changing resources.

### VERIFICATION AND DYNAMICAL ASPECTS

After the lunch, the workshop was continued by a session on Verification and Dynamical Aspects, and the first talk of this session was by Ramesh Bharadwaj, titled *A Framework for the Formal Analysis of Multi-Agent Systems*. In his talk Ramesh introduced a formal framework for the specification and analysis of multi-agent systems.

Wojciech Jamroga continued the session with a talk titled *Some Remarks on Alternating Temporal Epistemic Logic*. He presented some changes to the Alternating Epistemic Transition framework to cope with a flaw he had discovered regarding incomplete information. Although he had already found out that his solution to this problem was not (entirely) correct, the talk was very interesting.

Although Hendrik Wietze de Haan submitted a paper on *Knowledge-based Asynchronous Programming Inspired by a Hardware Leader Election Problem*, his talk was not on this subject though, but on the semantics of these kinds of systems.

The last presentation of this session was by Marcin Wolski on *Change in Non-Flat Multi-Agent Systems*. In the presentation Marcin presented a new logic, called Dynamic Context Logic, for modeling belief revision in multi-agent systems. In contrast to the already existing research done in this area DCL starts from a multi-agent point of view to look at belief revision.

## COMMUNICATION AND MENTAL STATES

The last session of the day, which topic was on communication and mental states, started with a talk by Patrick Doherty called *On Mutual Understanding among Communicating Agents*, in which he described a formal, logical, approach to solve the problem of agents communicating with only a partially shared ontology. Through the use of, what he called, weakest sufficient and strongest necessary conditions an agent can ask approximate questions that the other agent should understand.

The second talk of this session by Magdalena Kacprzak on *A Multi-Agent Logic*, presented a new approach to formally describe multi-agent systems. The logic is based on propositional branching temporal and algorithmic logic and therefore focuses on dynamic and temporal aspects of decentralized systems.

The last talk of the session, and of the day, was on *Logic Based Semantics for an Agent Communication Language* presented by Marco Alberti. In this talk he discussed a formalism to express interaction protocols and give a social semantics to the behavior of agents, while focusing on communicative acts.

Although this workshop on Formal Approaches to Multi-Agent Systems was new this year, it might turn out to become an annual workshop at which researchers of all different multi-agent systems related topics can present their findings.

The diverse program of the workshop, with the various research topics presented, made it a very interesting day. Let us hope that next year's workshop will be as diverse and interesting as it was this year.

For more information on this workshop, see the official site at <http://www.ai.rug.nl/conf/famas/>.

## A Student-Organized Conference on Intelligent Methods in Marketing

*Ludo Waltman*  
*Student I&E, Erasmus Universiteit Rotterdam*

Thursday the 17th of April the conference Intelligent Methods in Marketing took place at the Erasmus Universiteit Rotterdam. The conference was organized by VRiSBI, the student association for the B.Sc. and M.Sc. study Informatics & Economics (I&E) at Erasmus University. Around eighty people visited the conference. Most of them

were students I&E, economics, econometrics or artificial intelligence from Rotterdam or elsewhere. There were also a number of people from business and some researchers from Erasmus University.

## BASICS

The subject intelligent methods in marketing was approached from both a theoretical and a practical point of view. Michiel van Wezel, member of the AI research group at Erasmus University, introduced the subject. He first discussed the proper definition of AI. In van Wezel's view AI can best be seen as the study of the design of rational agents. He proceeded to give a brief overview of the history of AI and the connections with other disciplines. As an example of the application of intelligent methods in marketing Van Wezel discussed a paper in which consumer choice is predicted by stacking the predictions of a number of neural networks.

## NO BLACK BOXES

The next presentation was given by Philip Hans Franses, professor of applied econometrics at the Erasmus Universiteit. From a scientific point of view Franses was perhaps the most interesting speaker. He strongly argued against the use of black box models in marketing. According to Franses marketers need to be able to justify their choices, especially when the models they used did not perform well. Choices can only be justified when the underlying models are transparent. However, Franses did not argue against the use of neural networks in marketing. In his view neural networks can be used in marketing when it is possible to give a meaningful interpretation to the hidden nodes. As an example Franses discussed the use of neural networks to model brand choice. In the example the hidden nodes of the neural network represent the so-called consideration set, the set of brands a consumer evaluates prior to making a choice.

## MARKETING MANAGEMENT SUPPORT

Berend Wierenga, professor of marketing at the Erasmus Universiteit, and Niek Althuisen, one of his Ph.D. students, discussed the use of AI in marketing management support systems. According to Wierenga about half of the decisions marketing managers make are based on models, the other half are based on judgements. Marketing management support systems supporting model based decisions are mainly data driven and do not use AI. However, for marketing management support systems to support decisions based on judgements AI is often used. Wierenga

distinguished different types of marketing management support systems by the method of knowledge representation they use. Althuisen presented the provisional results of his research into the effectiveness of case based reasoning systems to support the design of sales promotion campaigns. The design of a sales promotion campaign is a semi-structured problem. Sales promotion managers address such problems often by making use of previous campaigns to inspire a new one. According to Althuisen this makes the problem suitable for case based reasoning systems.

#### **DISTRIBUTING NEWSPAPERS**

In the afternoon Tom Heskes, AI researcher at the KU Nijmegen, gave a presentation of the Just Enough Delivery system. The system is used to optimize the distribution of the Dutch newspaper De Telegraaf to its outlets. It uses neural networks to predict how many newspapers an outlet is able to sell. Important explanatory variables are the recent sales of the outlet and the sales one year ago. However, the weather can also be taken into account. To reduce the danger of overfitting, a single neural network is trained for all outlets and the system uses empirical Bayes techniques. Heskes pointed out that the system only predicts the number of newspapers an outlet is able to sell. This leaves the question of how many newspapers to deliver to an outlet to the newspaper company to decide.

#### **DATA MINING**

Peter van der Putten of software company KiQ and Martijn Wiertz of SPSS both discussed the use of data mining in practice. The subject of Van der Putten's presentation was the role of data mining within customer relationship management. According to van der Putten predictions about customers need to be combined with a business strategy that should be implemented in all channels of a company. As an example, Van der Putten demonstrated how the same offer, which depends on the predictions about a customer, can be made both when the customer visits a website and when he phones a call center. Wiertz emphasized that intelligent methods alone are not sufficient for successful data mining. Although companies usually have lots of customer information, they often do not have the information needed to properly model the behavior of their customers. Also, because many companies are using data mining without a clear objective, they often get results that are of no use. Wiertz subsequently discussed the CRISP-DM process model, which should prevent these problems. The model is used

by SPSS and other companies and describes the phases of the data mining process.

#### **REQUIRED PROPERTIES**

At the end of the day, Jan van den Berg, AI researcher at the Erasmus Universiteit, drew some final conclusions. He summarized a number of important properties of intelligent methods. First of all intelligent methods should have a good performance, at least comparable with econometric methods. They should also be adaptive to a changing environment. And to be useful in practice they should be simple and transparent. Transparency makes a model easier to trust and allows someone to learn from the errors in a model. Van den Berg stressed the importance of both the techniques behind intelligent methods and the relationship between intelligent methods and the domain in which they are applied. In his view the increasing attention for intelligent methods in marketing and other fields of economics indicates the importance of the study Informatics & Economics.

#### **From Conception to Defence**

*Jaap van den Herik  
IKAT, Maastricht*

Writing, reading and assessing is a long way. For every Ph.D. student it is the only way to achieve the doctor's title. A supervisor has a similar trio of activities, namely rewriting, improving and commenting upon. Each of these six activities only represent the final work, i.e., the composition of the thesis. *En route*, some exercises have been performed in the form of writing (reading, etc.) articles, but the making of a Ph.D. thesis is an achievement in itself.

So far we disregarded the world before the writing: the thinking, the conception, the development of ideas, the investigations, and the experiments. The ideas on how long the way to writing may take differs considerably among supervisors and students alike. The common part for supervisors and students is that the writing always takes longer than expected. Even experienced supervisors are eager to believe that "this" particularly gifted student will perform the writing in a very short period since ... . The answer on what usually happens is that only in a very small number of cases the Ph.D. student remains within the four-year timeframe.

This observation brings me to the point of money and expectation. Nowadays, a full SIKS professor is expected to generate some two Ph.D. defences per year. To achieve this result, one should guide eight Ph.D. students simultaneously, two by two in different stages of their research. If the student needs five years instead of four, the supervisor is required to increase the number of students (from 8 to 10) and to raise the effort to guide them. Moreover, s/he should enlarge his/her second-flow-of-funds and third-flow-of-funds projects in order to appoint the required number of Ph.D. students. However, the matching principle in the Netherlands makes it difficult to fulfil this task. Whatever the case, it is quite a performance for the SIKS supervisors and for the other AI supervisors to reach year after year the requested quatum.

In the current list of Ph.D. defences, we see reoccurring AI's previous contacts with Utrecht and Wageningen in the framework of SKBS (Foundation of Knowledge Based Systems). Then we had a thesis on bovine mastitis (Mirjam Nielen, *Detection of bovine mastitis based on milking parlour data*) and now we have one on Swine Fever Virus, a highly relevant topic.

**M. Abolhassani** (March 11, 2003). *Business Objects: from Definition to Application*. TU Delft. Promotor: Prof.dr.ir. J.L.G. Dietz.

**B. van Schooten** (April 17, 2003). *Development and specification of virtual environments*. Universiteit Utrecht. Promotor: Prof.dr.ir. A. Nijholt. Co-promotor: Dr. E.M.A.G. van Dijk

**D. Klinkenberg** (April 24, 2003). *Mathematical Epidemiology and the Control of Classical Swine Fever Virus*. Universiteit Utrecht. Promotores: Prof.dr.ir. M.C.M. de Jong and prof.dr. J.H.M. Verheijden. Co-promotor: Dr. R.J.M. Moormann.

**M. Jansen** (June 5, 2003). *Formal Explorations of Knowledge Intensive Tasks*. Universiteit van Amsterdam. Promotor: Prof.dr. B.J. Wielinga. Co-promotor: Dr. A.Th. Schreiber.

**Y. Ran** (June 18, 2003). *Repair Based Scheduling*. Universiteit Maastricht. Promotor: Prof.dr. H.J. van den Herik. Co-promotor: Dr.ir. N. Roos.

**L.J. Kortmann** (July 4, 2003). *The Resolution of Visually Guided Behaviour*. Universiteit Maastricht. Promotores: Prof.dr. H.J. van den Herik and prof.dr. E.O. Postma.

We congratulate the Ph.D. students with their result and wish them much success in their further (research) career. Meanwhile we invite readers and

committee members of the various assessment committees to submit a review contribution on the theses they have enjoyed reading.

## APPOINTMENTS

As a sequel to the announcements of professorial appointments in the February 2003 issue, we are happy to continue with the following message. Per April 1, 2003 dr. Guus Schreiber has been appointed as full professor at the Vrije Universiteit Amsterdam, Department of Artificial Intelligence, Division of Mathematics and Computer Science, Faculty of Sciences. Professor Schreiber has been Associate Professor at the Department of SWI of the UvA for many years. Moreover, recently the University of Nijmegen has appointed dr. C.L.M. Witteman as full professor in Diagnostic Decision Making at the department of Pedagogische Wetenschappen en Onderwijskunde, Faculty of Social Sciences. Professor Witteman graduated at the Universiteit Utrecht in 1992. We wholeheartedly congratulate both professors with their appointment and wish them a fruitful cooperation with the BNVKI.

After Schomaker, Van Harmelen and Postma (see issue 20.1 of the BNVKI Newsletter) Cilia Witteman and Guus Schreiber are the fourth and the fifth person in the AI community who have been appointed recently. This statement is a direct and logical follow up of my congratulations expressed in the February issue. However, after that publication I realized that even more had happened in the world of AI professors and AI-related professors. An attempt to a partial correction for three more professors follows below. Some two years ago the Universiteit Utrecht appointed Prof.dr. Linda van der Gaag. It is time to devote some more space to her work and that of her group in one of the subsequent issues. For the Editorial Board it may be a hint to do so with the other newly appointed professors too; it might be excellent to have their profile in the BNVKI Newsletter.

## INAUGURAL ADDRESSES

Many professors may lead to many inaugural addresses. Two more professors have been appointed in the recent past. They are professor Lynda Hardman (Technische Universiteit Eindhoven) and professor Jan Top (Vrije Universiteit Amsterdam). Together with Eric Postma they will have their inaugural addresses in the months May and June. Postma and Top have selected the same date for this important day. Below we provide the list.

**Prof.dr. L. Hardman** (May 2, 2003). *Smart Style for Conveying Information*. TU Eindhoven.

**Prof.dr. J.L. Top** (June 13, 2003). *Food Informatics: Kokkerellen met Modellen*. Vrije Universiteit Amsterdam.

**Prof.dr. E.O. Postma** (June 13, 2003). *De Onderste Steen Boven*. Universiteit Maastricht.

**SECTION KNOWLEDGE  
SYSTEMS IN LAW  
AND COMPUTER SCIENCE**

**Section Editor  
Marie-Francine Moens**

**De Toepasbaarheid van Toegepaste  
Juridische Kenleer**

*JURIX lezing door Laurens Mommers  
Universiteit Leiden  
28 februari 2002*

*Verslag door Gerard Vreeswijk  
IS, Universiteit Utrecht*

Eén of twee jaar geleden, ergens op het platteland in de VS, vulde een corpulente puber uit een etnisch kansarm milieu zijn tijd met het geven van juridisch advies op speciaal daartoe ingerichte internetforums. Uiteindelijk presteerde hij het om door het surfende publiek als best gewaardeerde "online legal expert" te worden aangemerkt. De officiële advocatuur was niet gecharmeerd door dit initiatief en heeft geprobeerd dit op verschillende manieren de kop in te drukken.

In de lezing van Laurens Mommers over "de toepasbaarheid van toegepaste juridische kenleer" werd dit geval (waarover destijds in verschillende media werd bericht) door Henry Prakken ter sprake gebracht. Zeker niet toevallig, omdat deze anekdote in ieder geval qua toepasbaarheid typerend is voor één van de richtingen die Laurens - als hij daarvoor de kans krijgt de komende jaren met zijn Veni-aanvraag - op wil [2].

**BELOFTE MAAKT SCHULD**

Laurens begon zijn lezing door aan te kondigen dat de belofte die hij maakte over toepassingen in zijn in 2002 uitgebrachte proefschrift *Applied legal*

*epistemology: building a knowledge-based ontology of the legal domain*, nog niet helemaal is nagekomen. Hij wil daar in de komende jaren hard aan gaan werken door zich te richten op twee toepassingen. Allereerst wil Laurens werken aan *computer supported collaborative work* (CSCW) in het juridisch domein. Nu kunnen wij ons daar natuurlijk wel iets bij voorstellen, en Laurens gaf ook enkele voorbeelden. Toch werd mij niet duidelijk waar hij precies aan denkt, ook niet door goed naar Laurens te luisteren en ook niet in het antwoord op de vraag van Mark van de Peijnen, die aan het eind van de lezing Laurens vroeg wat het nut van een dergelijk systeem kan zijn. De open ruimte op mijn aantekeningenveld die ik gereserveerd had voor Laurens' antwoord vulde ik uiteindelijk maar op met een groot vraagteken. Omdat Laurens deze vraag in de toekomst ook nog wel voorgeschoteld zal krijgen, zal hij moeten nadenken hoe hij het nut van juridische CSCW's (dat er vast wel is) zo goed mogelijk kan verwoorden. De tweede toepassing die Laurens noemde was het stimuleren van het gebruik en uitwisselen van juridische informatie door leken. Lettende op de juridische internetforums kon ik mij hier iets meer bij voorstellen. Niettemin twee interessante toepassingen, in wat Laurens gekcherend "mijn onderzoeksagenda voor de komende pakweg 30 jaar" noemde.

**ONTOLOGIE VAN HET RECHT**

Voor de broodnodige theoretische achtergrond begon Laurens met zijn proefschrift (2002) kort samen te vatten. Zo bestaat er volgens Laurens een wezenlijk verschil tussen het recht enerzijds en kennis van het recht anderzijds. Ook bestaat er volgens hem een essentieel verschil tussen representatie van het recht enerzijds en representatie van kennis van het recht anderzijds. Mij ging dit net iets te snel en ook andere aanwezigen in de zaal hadden hoorbaar moeite met dit subtiele verschil. Joost Breuker vroeg zich bijvoorbeeld af of er eigenlijk wel een verschil was tussen de representatie van een domein en de representatie van kennis van een domein. Hier kwam men niet helemaal (of helemaal niet) uit.

Laurens ging daarna nog even door op zijn proefschrift. (Drie dimensies van kennis: acquisitie, object, rechtvaardiging. Soorten kennis: expliciete kennis, impliciete kennis, juridische kennis, juridisch relevante kennis, onnutte kennis. Ontologie: entiteiten, zoals beweringen, regels en normen; epistemologische rollen: feit, reden, *defeater*, praktische kennis.) Lezers met belangstelling voor een kennis-gebaseerde ontologie van het juridische domein verwijs ik graag naar dit proefschrift. Vervolgens kwam

Laurens terug op het nut van toegepaste juridische kenleer. Onze kennis van argumentatiesystemen zoals die de afgelopen tientallen jaren zijn onderzocht op het snijvlak van AI en recht, zo betoogde Laurens, kunnen we nu mooi toepassen in fenomenen als *collaborative workspaces*, internetforums en *online dispute resolution* (het schikken van geschillen op internet buiten het officiële rechterlijk circuit om). In zijn onderzoeksagenda ten aanzien van toegepaste juridische kenleer pleit Laurens voor de ontwikkeling van een raamwerk voor het online samenwerken in een juridische context. Hij laat zich daarbij inspireren door bestaande internetforums zoals *tweakers.net* waar deelnemers door het geven van goede adviezen karma(-punten) kunnen vergaren. Met dit karma krijgen waardevolle deelnemers meer invloed. Zaken waar volgens Laurens aan gedacht zou moeten worden zijn bijvoorbeeld het gebruik van noten, *peer review*, reputatie, vertrouwen, en objectieve (formele?) kenniscriteria voor betrouwbaarheid, rechtvaardiging en coherentie. Als voorbeeld werd aangevoerd een applicatie waarmee advocaten op een kantoor samen konden werken aan het in elkaar steken van een goede pleitnota. Twee sprekers uit de zaal merkten daarbij op dat onderzoek op het gebied van onderwijskunde heeft aangetoond dat de winst van groepswerk niet evident is. Zo zijn er experimenten met brainstormsessies gehouden waarbij deelnemers enthousiast waren over de uitkomst terwijl de kwaliteit van diezelfde uitkomst volgens objectieve (?) maatstaven niet veel beter was dan het werk van één individu.

#### KARMA IN HET RECHT

Het begrip "karma" wekte enige hilariteit in de vergadering. In dit verband wil ik wijzen op de site waar dit idee vandaan komt, te weten *slashdot.org*. Wie meer wil weten over het karmasysteem raadplege daar de FAQ. Het is nog vrij ingewikkeld. Omdat zowel *tweakers.net* als *slashdot.com* worden gebruikt door (mild uitgedrukt) technisch aangelegde gebruikers, zal het volgens mij nog een heel probleem worden om deze ideeën over te hevelen naar de behoudende wereld van het recht. Ik herinner mij in dit verband een column van Thian Yee Sze en Arno Lodder [1], die dit feit illustreerden door aan te geven dat veel kantoren ongelooflijk achterlopen met de introductie van bijvoorbeeld nieuwe tekstverwerkers. Er is dus inderdaad nog heel wat werk te doen voor Laurens Mommers, en ik ben benieuwd in welke richting hij dit de komende jaren gaat doen.

[1] Thian Yee Sze en Arno Lodder, ICT en de

rechterlijke macht van Singapore: waarin een klein land groot kan zijn. *R en EM* 2002, nr. 2.

[2] L. Mommers, 2003. *Veni-aanvraag over empirisch onderzoek naar argumentatie in het consumentenrecht*.

### POWER: Translation Patterns in Legislation

*Jurix lecture by Bas van der Maat, Corina Koolen, Emile de Maat and Saskia van de Ven*

*February 28, 2003*

*Report by Rik De Busser  
ICLI, Katholieke Universiteit Leuven*

The second session of the Jurix meeting of February 28, hosted by the Dutch Tax and Customs Administration (DTCA) in Utrecht, was a presentation by four students who are all working on representational issues of the POWER project. One of the major objectives of POWER is the development of a formalized representation for legislation in order to use it in decision support systems and advanced information systems.

#### FROM NORM PHRASES TO UML

In order to accomplish this, legislation is semi-automatically translated into Unified Modeling Language (UML). At the moment, only noun phrases are automatically transformed to a UML representation, while human modellers take care of all other elements of the texts. Emile de Maat, a student of Informatics and Communication Sciences, is investigating the feasibility of translating verb phrases (and in extension, complete sentences) to UML uniformly. At present, the consistency of the translation of verbal groups into UML is not very high because of the large number of ad hoc translations; it would therefore be useful to automate the translation process at least partially. Emile argued that clauses in law texts can be classified into categories that are relevant for POWER based on structural characteristics. Conversion to UML could be facilitated by breaking up each sentence of a law text into a main clause and subordinate clauses, and to translate each segment separately into UML, taking into account its category.

#### REPRESENTING TEMPORALITY AND NORMS

The research of Language and AI student Saskia van de Ven focused on the modeling of temporality within the POWER methodology. In POWER

UML, temporal expressions are mostly flattened into propositions. This ensures that they are isomorphic with the original text, but their conversion is not uniform and it destroys the semantic composition of the expressions. Saskia discussed a number of alternatives for representing temporality and showed that all of them had certain drawbacks. Eventually, she was inclined to favor temporal reification (in which time is represented as a logical argument), since it appeared to be the most powerful representation and was compatible with existing ones. An important question is whether there really is a need for having a 'rich' temporal representation in POWER. Saskia hoped to find an answer by making a classification of temporal profiles in legislation.

Bas van der Maat stressed the importance of deontic logic for representing norms and argued that it could be used in computer systems to automatically reason with norms and discover redundancies in the body of legislation. However, a precondition to introduce deontic elements in the POWER system would be a more or less uniform representation of deontic concepts in legislation itself; the situation in reality does not appear to be so straightforward.

#### **FROM UML TO NATURAL LANGUAGE**

Models that have been constructed in POWER need to be evaluated by domain experts who do not necessarily have knowledge of UML. Corina Koolen, the last speaker in this presentation, argued that this could be a good reason for introducing a natural language generation component in POWER to translate the UML representations back into a format that is legible for non-UML savvy experts and nevertheless retains most of the uniformity and strictness of a formal language. Unfortunately, the ad hoc conversion of concepts from the law texts into UML (which has also been mentioned by the other speakers) and a number of problems make it very difficult to straightforwardly generate well-formed sentences from the formal representation. Corina suggested that back-translation might be performed semi-automatically by breaking up long predicates into individual words, by translating logical operators and by using grammatical tags.

#### **SOFTWARE VERSUS KNOWLEDGE REPRESENTATION**

Already during the exposition of the first speaker, a heated discussion started on the appropriateness of UML as a formal meaning representation. The main opponents raised the objection that UML is a software specification language and not a knowledge representation language, and might therefore not be the ideal tool for encoding the

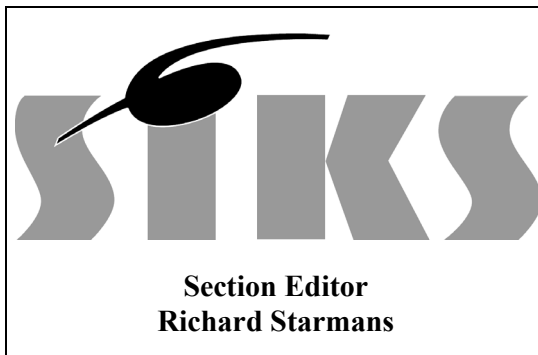
semantics of legislative texts. The POWER students, backed by Tom van Engers of the DTCA, responded that representing knowledge in UML certainly has a number of drawbacks, but that at the same time the goal of the project is to make a running software system, for which UML is more useful than most knowledge representation languages. This interesting confrontation between methodological correctness and a practical urge for solving problems would probably have continued far into the day, were it not for the justified strictness of the Jurix moderator.

### **AI EDUCATION**

**Section Editor**  
**Evert van de Vrie**

#### **M.SC. THESES IN SECTION AI EDUCATION**

Supervisors of remarkable M.Sc. work are invited to ask their student for a short article, to be submitted to the editor of the Section AI Education.



#### **Advanced SIKS Course: Implementing Intelligent Search in XML Data**

*May 15-16, 2003, Zeist*

On May 15 and 16, 2003 the School for Information and Knowledge Systems (SIKS) will organize an Advanced Course on "Implementing intelligent search in XML data". 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.

Standard query languages for XML like XQuery support Boolean retrieval: a query result is a (possibly restructured) subset of XML elements or entire documents that satisfy the search conditions of the query. Information retrieval, on the other hand, is based on the ranked retrieval paradigm: given a query (i.e. set of keywords), the systems returns documents that match the query as good as possible. In this course we address research and systems that support or combine both paradigms. We focus on implementation aspects, so we deal with topics like systems architecture, query optimization, access and storage structures.

Registration is now open (see below). Since the event is part of the Advanced Components Stage of SIKS' educational program, SIKS Ph.D. students are strongly encouraged to participate.

Location: Conference center Woudschoten in Zeist.

Scientific director: Dr. H. Blanken (UT)

#### PRELIMINARY PROGRAM

Thursday, May 15, 2003

09.30-10.25	Registration
10.25-10.30	Opening
10.30-12.00	Prof.dr. W. Jonker: Extending XML for IR processing
12.00-13.15	Lunch
13.15-14.15	Dr. M. Windhouwer: Usage of XML in digital libraries
14.15-14.30	Break
14.30-16.15	Dr.ir. A. de Vries & dr.ir. M. van Keulen: System architectures and query processing
16.15-16.30	Break
16.30-18.15	Dr.ir. A. de Vries & dr.ir. M. van Keulen: Access structures (and exercises)
19.00-21.00	Diner

Friday, May 16, 2003

9.00-10.30	Dr. L. Feng: The Semantic Web
10.30-10.45	Break
10.45-12.15	Dr. H. Blanken: Implementation aspects of the NIAGARA system
12.15-13.30	Lunch

13.30-15.00	Ir. J. Vonk: MM retrieval: the SUMMER project
15.00-15.15	Break
15.15-16.30	Dr.ir. D. Hiemstra: Evaluation of XML systems
16.30-17.0	Discussion

#### REGISTRATION

For registration you are kindly requested to fill out the registration form at <http://www.siks.nl/> (Check the SIKS-agenda 2003 and click "Advanced course" on May 15-16, 2003). For questions, contact: [office@siks.nl](mailto:office@siks.nl)

### Advanced Course on Mobile Commerce

*June 17-18, 2003, Amsterdam*

The course is part of the Advanced Components stage of SIKS' educational program for Ph.D. students.

#### OBJECTIVE

Current projections suggest that, within a few years, there will be well over a billion mobile phone users worldwide and that the majority of mobile phones will be connected to the Internet. The explosion in mobile phone and PDA ownership along with the growing popularity of WLAN technologies and the deployment of 2.5G and 3G networks is leading to an explosion of new e-Commerce applications and services generally referred to as Mobile Commerce - or simply "m-Commerce". m-Commerce is also about new usage scenarios and technologies that overcome the limitations of mobile devices to support users in the context of a broad range of time critical activities.

The objective of this 2-day course is to introduce participants to the technologies, applications, services and business models associated with m-Commerce as well as to provide a brief overview of future trends and ongoing research in this new and fast growing area.

This course is based on teaching material used by the instructor in the eCommerce Master's Program at Carnegie Mellon University and also on the instructor's recently published book, *m-Commerce: Technologies, Services and Business Models* (Wiley, April 2002).

## INTENDED AUDIENCE

The tutorial is intended for a broad audience of managers, developers, researchers and graduate students interested in gaining a better understanding of mobile commerce. It introduces participants to the technologies, business models and emerging services of m-commerce, while also providing an overview of key research issues. The course will be taught in English.

## LECTURER

Norman M. Sadeh (Carnegie Mellon University and Vrije Universiteit Amsterdam)

## REGISTRATION FOR SIKS PH.D. STUDENTS

The organization cooperates with the Dutch Research School for Information and Knowledge systems (SIKS). The course fits into the Advanced Components stage of SIKS' educational program for Ph.D. students. Therefore they are strongly encouraged to participate. Participation is free for all fully registered SIKS Ph.D. students. If you are interested in taking this course, please send an e-mail to [office@siks.nl](mailto:office@siks.nl) to register.

## FORMAT AND LECTURES

This is a 2-day course with 5 hours of lecture each day. Class format will combine formal presentations with discussions.

### Tuesday June 17, 2003

09.30-10.00 Welcome

10.00-11.15 Lecture 1

Course Summary and Objectives

- Objectives of the course
- What is m-Commerce?
- A first look at i-Mode, Nordea's WAP Solo and Airflash/Webraska
- Context and Trends: The Forces Behind m-Commerce

Discussion:

- Differences between fixed Internet e-Commerce and m-Commerce

11.30-12.45 Lecture 2

Mobile Communications: A managerial overview of 2G, 2.5G and 3G technologies

- A managerial overview of WiFi (IEEE802.11)

Discussion:

- The mobile communications landscape over the next 5 years: implications for m-Commerce

14.15-15.30 Lecture 3

Mobile Internet Technologies

- Mobile Internet Challenges
- A managerial overview of WAP2.0
- The role of Java
- Usability Considerations

Discussion:

- WAP: Success or Disaster?

15.45-17.00 Lecture 4

Mobile Internet Security & How Open is the Mobile Internet?

- Mobile Internet Security Challenges
- GSM/GPRS/UMTS SIM-based security
- WAP security: WIM, WTLS/TLS, WMLScript SignText()
- How Open is the Mobile Internet?
- A managerial overview of 3GPP's service network architecture

Discussion:

- Mobile Internet Standards and their impact on the m-Commerce value chain.

### Wednesday June 18, 2003

10.00-11.15 Lecture 5

Mobile Commerce Today

- Mobile Portals, Mobile Infotainment Services, Mobile Ticketing, Mobile Banking, Mobile Advertising, Mobile e-Tailing
  - Including a close look at different m-Commerce business models
- A Closer look at i-Mode and other successful services
- Mobilizing enterprise applications

Discussion:

- What does it take to succeed in m-Commerce?

11.30-12.45 Lecture 6

Mobile Payment and Location-Sensitive Services

- Mobile Payment solutions today
  - Operator-based microbilling solutions (e.g. Cingular DirectBill or i-Mode)
  - Bank-led initiatives (e.g. EMPS, Paiement CB sur Mobile)
  - Collaborative initiatives (e.g. Mobipay)
  - Others (e.g. PayPal)
  - Risk management
  - Business models
- Overview of ongoing mobile payment standardization initiatives (e.g. MeT, Mobey, Mobile Payment Forum, etc.)
- Overview of positioning/location tracking technologies
- Overview of Location-Based Services (LBS)
  - Services, Technologies and Business Models

Discussion:

- Mobile Commerce: Privacy Issues

14.15-15.30 Lecture 7

Future m-Commerce Services and Business Models

- Context Awareness
- Web Services
- Intelligent Agents
- Ubiquitous Computing
- Privacy Issues
- Multi-channel strategies
- 4G

Discussion:

- Impact on future business models

15.45-17.00 Lecture 8

Early Lessons and Future Prospects

- Recalibrating Early Expectations
- Early success ingredients
- From killing dead time to context awareness
- Convergence of the Fixed and Mobile Internet
- Concluding remarks

Discussion:

- To be determined, based on interests of participants.

The course will be given in room AGORA-2 in de main building - VU - De Boelelaan 1105.

#### INSTRUCTOR

Norman M. Sadeh is an Associate Professor at Carnegie Mellon University (CMU) and the Vrije Universiteit Amsterdam (VUA). At CMU, he is affiliated with the School of Computer Science, the eCommerce Institute and the Institute for the Study of Information Technology and Society. He currently teaches, consults and conducts research in Mobile Commerce, Supply Chain Management, Agent Technologies and the Semantic Web and is also interested in the broader business, social and policy implications associated with the emerging Information Society. Norman also directs Carnegie Mellon University's Mobile Commerce Laboratory.

Two years ago, Norman returned to CMU from the European Commission in Brussels, where he had spent five years as Program Manager. At the Commission, he most recently served as Chief Scientist of the € 550M (US\$500M) European research initiative in "New Methods of Work and eCommerce", an initiative that brings together leading researchers from industry and academia from all across Europe. As such, he was responsible for shaping European research priorities in areas such as eCommerce, mCommerce, Virtual Enterprises, Knowledge Management, Agent Technologies, and the Semantic Web. As of



*Norman M. Sadeh.*

December 2000, these activities had resulted in the launch of over 200 R&D projects, typically ranging between \$2M and \$4M, and collectively involving over 1,000 European organizations.

Norman has been on the faculty at CMU since 1991. Prior to joining the European Commission, he co-founded and co-directed CMU's Intelligent Coordination and Logistics Lab., which he helped position as one of the premier research organizations in intelligent planning, scheduling, and e-Supply Chain Management. There he pioneered the development, deployment and commercialization of several novel technologies and applications through close collaboration with organizations such as IBM, Raytheon, Mitsubishi, Komatsu, the US Army, Carnegie Group (now part of Logica), and NEC.

Norman received his Ph.D. in Computer Science at Carnegie Mellon University with a minor from GSIA. He holds a Master's in Computer Science from the University of Southern California and a BS/MS degree in Electrical Engineering and Applied Physics from Brussels Free University. He is also an APICS Certified Fellow, a Fellow of the Belgian American Educational Foundation and a member of the ACM, AAAI and INFORMS. He has authored around 100 scientific publications and serves on the editorial board of several journals, including *Autonomous Agents and Multi-agent Systems (AAMAS)* and *Electronic Commerce Research Applications (ECRA)*. He also recently wrote a book on "M-Commerce: Technologies, Services and Business Models" published by Wiley (April 2002).

## **SIKS Masterclass Communication Modeling**

*June, 30, 2003, Tilburg*

This Master Class is especially aimed at Ph.D. students of the research school SIKS and also open to others. The objective of this one-day intensive course is to give an advanced introduction into communication modeling and communication engineering. The last decade, we have seen that the integration or coupling of systems has become more and more important, e.g., based on EAI technology or XML-based messaging systems. What does this mean from a business perspective? Central to this day is the Language/Action Perspective that focuses on what people *do* when communicating. Originally introduced by Winograd and Flores in the 80's, this perspective has made a broad impact on research in Information Systems (e.g. workflow management), CSCW and AI (e.g. agent communication).

### **LECTURES**

1. Prof. Jan Dietz, TU Delft. *The atoms and molecules of communication – the DEMO modeling perspective*
2. Prof. Goran Goldkuhl, Linköping University *Communication modeling – a workpractice perspective*
3. Prof. James Taylor, University Montreal *Organizational Communication*
4. Dr. Jeff Conklin, Cognexus Institute *Argumentation systems and collective sensemaking: 15 Years on from gIBIS*

### **ORGANIZER**

Dr. Hans Weigand, Universiteit Tilburg,  
H.Weigand@uvt.nl, tel. 013-4662806.

### **DATE AND LOCATION**

Monday June 30, 2003, 10.00h-17.00h, Universiteit Tilburg.

### **REGISTRATION**

Please register in advance with Alice Kloosterhuis, [alice@uvt.nl](mailto:alice@uvt.nl), tel. 013-4663020. Attendance is free for SIKS Ph.D. students and SIKS members. For others, the fee is € 20 (including lunch).

## **ANNOUNCEMENTS**

### **Data Mining Course**

*July 7 - 11, 2003  
IKAT, Universiteit Maastricht*

Data mining is a relatively new scientific field that enables finding interesting knowledge (patterns, models and relationships) in very large databases. It is the most essential part of the knowledge-discovery process and has the potential to predict events or to analyse them in retrospect. Data mining has elements of databases, statistics, artificial intelligence, and machine learning.

### **WHY DATA MINING?**

A typical database contains data, information or even knowledge if the appropriate queries are submitted and answered. The situation changes if you have to analyse large databases with many variables. Elementary database queries and standard statistical analysis are not sufficient to answer your information need. Your intuition guides you to understand that the database contains more knowledge on a specific topic that you would like to know explicitly. Data mining can assist you in discovering this knowledge. The course shows you within five days how this works. You will learn new techniques, new methods, and tools of data mining. Hands-on education is involved.

### **COURSE DESCRIPTION**

The course focuses on techniques with a direct practical use. A step-by-step introduction to powerful (freeware) data-mining tools will enable you to achieve specific skills, autonomy and hands-on experience. A number of real data sets will be analysed and discussed. In the end of the course you will have your own ability to apply data-mining techniques for research purposes and business purposes.

### **COURSE CONTENT**

- The Knowledge Discovery Process
- Preparing Data for Mining
- Basic Techniques for Data Mining:
  - Decision-Tree Induction
  - Rule Induction
  - Instance-Based Learning
  - Neural Networks

- Bayesian Learning
  - Support Vector Machines
  - Ensemble Techniques
  - Clustering
  - Association Rules
  - Tools for Data Mining
- How to Interpret and Evaluate Data-Mining Results

#### INTENDED AUDIENCE

This course is intended for four groups of data-mining beginners: students, scientists, engineers and experts in specific fields who need to apply data-mining techniques to their scientific research, business management, or other related applications.

#### PREREQUISITES

The course does not require any background in databases, statistics, artificial intelligence, or machine learning. A general background in science is sufficient as is a high degree of enthusiasm for new scientific approaches.

Costs:

Academic fee	€ 500,-
Non-academic fee	€ 750,-

Included in the price are:

- Course material
- Coffee en tea during the course
- A dinner on Thursday evening

Upon request a certificate of full participation will be provided after the course.

More information can be found on <http://www.cs.unimaas.nl/summercourse>.

### IKAT/SIKS Symposium: Brain, Language, and Artificial Intelligence

*June 13, 2003, Maastricht*

On June 13, SIKS and IKAT will host a symposium on Brain, Language, and Artificial Intelligence at the Natuurhistorisch Museum in Maastricht.

The preliminary program is:

10.45h - 11.00h:	Registration
11.00h - 11.45h:	Reind van de Riet
11.45h - 12.30h:	Jaap Murre
12.30h - 13.30h:	lunch
13.30h - 14.15h:	Patrick Hudson
14.15h - 15.00h:	Frank van Harmelen

Topics of the talks will soon be available from <http://www.cs.unimaas.nl/>. Registration is free for SIKS members, and a small admission is required from other participants. When interested please contact Michel van Dartel (Mf.vanDartel@cs.unimaas.nl) or Joke Hellemons (hellemon@cs.unimaas.nl).

The symposium precedes the inaugural speech of Eric Postma, which will be held at 16.00h at the aula of the Universiteit Maastricht, Minderbroedersberg 4-6, Maastricht. The title is *De onderste steen boven*.

### BNAIC 2003

*October 23-24, 2003, Nijmegen*

The 15th Belgian-Dutch Conference on Artificial Intelligence (BNAIC'03) is organised by SNN and the Katholieke Universiteit Nijmegen, under the auspices of BNVKI/AIABN (the Belgian-Dutch Association for Artificial Intelligence), with support from SIKS (School for Information and Knowledge Systems) and NICI (Nijmegen Institute for Cognition and Information).

BNAIC'03 will be held on Thursday October 23 and Friday October 24, 2003 in the Radboud Auditorium and Kasteel Heijendaal in Nijmegen. It will be collocated with the workshop 'Learning Solutions' to be held on Wednesday October 22. This collocation aims to promote interaction between researchers in AI and industry. BNAIC papers addressing industrial applications will be offered a poster at the workshop.

#### SUBMISSION INFORMATION

The conference aims at presenting an overview of state-of-the art research in artificial intelligence in Belgium and The Netherlands. Submissions of the following three types are invited:

##### TYPE A: REGULAR PAPERS

Papers presenting new original work. Submitted papers should not exceed a length of 8 pages. These papers will be reviewed on overall quality and relevance. A-Papers will be accepted for either oral or poster presentation. All accepted papers will be fully published in the proceedings.

##### TYPE B: COMPRESSED CONTRIBUTIONS

AI papers that have been accepted after June 1, 2002 for other 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. B-Papers will be accepted for either oral or poster presentation. The abstract of the paper will be published in the proceedings. Note that, in departure from previous years, a separate author registration is required for each B-type contribution.

#### **TYPE C: DEMONSTRATIONS AND APPLICATIONS**

Proposals for demonstrations will be evaluated based on submitted demonstration summaries (in English) stating the following: the purpose of the system to be demonstrated, its user groups, the organisation or project for which it is developed, the developers, and the technology used. In addition, the system requirements and the duration (not exceeding 30 minutes) should be mentioned. Especially researchers from industry are encouraged to submit papers presenting their applications and experiences. The maximum size of demonstration summaries is 2 pages.

For all submission types possible topics of submissions include, but are not limited to

- multi-agent systems
- neural networks
- knowledge-based systems
- natural language processing
- games
- search
- machine learning
- robotics
- knowledge representation
- knowledge management
- knowledge discovery and data mining
- verification and validation
- ontologies
- logic programming
- optimization
- intelligent agents
- evolutionary algorithms

Papers and demonstration summaries should be submitted electronically according to the instructions at the BNAIC'03 conference website. Format information and style files can be found at this website as well. Submissions should be accompanied by a message stating the submission type (A, B, or C) and an abstract of the paper in plain text. Proper receipt of submissions will be acknowledged by e-mail. The deadline for submissions is June 2, 2003. Submission implies willingness of at least one author to register for BNAIC and present the paper. For each B-type

paper, a separate author registration is required. Authors keep the copyright of their submissions.

#### **IMPORTANT DATES**

Deadline for submissions: June 2, 2003  
Notification of acceptance: July 21, 2003  
Deadline for camera-ready papers: September 1, 2003

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#### **INVITED SPEAKERS**

Michael Kearns did his undergraduate studies at the University of California at Berkeley in math and computer science, graduating in 1985. He received a Ph.D. in computer science from Harvard University in 1989 studying issues of computational complexity in machine learning.

After postdoctoral position at M.I.T. and Berkeley, he joined the research staff of AT&T Bell Labs. Here he worked from 1991 to 2001 on basic AI and machine learning research. During his last four

years there, he was the head of the AI department, where he led a broad range of system and foundational AI work.



Currently Michael Kearns is a professor in the Computer and Information Science Department at the University of Pennsylvania. He is the co-director of Penn's interdisciplinary Institute for Research in Cognitive Science and has a joint appointment in the Operations and Information Management (OPIM) department of the Wharton School.

John Platt received his M.S. at Caltech in 1985, in the Physics of Computation group and his Ph.D. in Computer Science in the Caltech Computer Graphics group in 1989, studying both computer graphics and neural networks. He became Director of Research at Synaptics, where he worked on neural network architectures and hardware, neural networks to recognize objects, and handwriting recognition.



Currently he works at Microsoft Research in Redmond, as a Senior Researcher in the Communication, Collaboration, and Signal Processing group. His many research interests include intelligent image, music and speech processing, support vector machines and large margin learning, as well as computer interface hardware and software for multimedia and documents. In this context he worked on many advanced applications such as ClearType for optimal filtering of patterned displays, AutoAlbum for browsing through personal digital photographs, and AutoDJ for automatically generating music playlists.

Henk Barendregt studied mathematics at the Universiteit Utrecht specializing in logic and

completed his Ph.D. in 1971 on the topic of lambda calculus with Georg Kreisel. At that university he continued to work and wrote his monograph *The Lambda Calculus* (1981). Since 1986 he is professor at the Katholieke Universiteit Nijmegen in the field of Foundations of Mathematics and Computer Science. In 1997 Henk Barendregt was elected member of the Royal Dutch Academy of Sciences. In 2002 he received the prestigious NWO/Spinoza prize, the highest scientific distinction in the Netherlands.



As a postdoc at Stanford University Henk Barendregt came in contact with his first Buddhist teacher Kobun Chino Roshi. Later he studied with Phra Mettavihari, under whose guidance he began a long training. His research interests do not only include lambda calculus and computer mathematics, but also the problem of consciousness.

More information can be found on:  
<http://www.snn.kun.nl/bnaic/>

## Computer-RoShamBo Competition

*November 21, 2003, Maastricht and Graz*

The purpose of the competition is to write a Java program that can play RoShamBo. Your program will play against all other participating programs and the program winning the most games is the champion.

We have chosen the programming language Java because many students learn Java in school and it is independent from the operating system (Windows, Linux, Apple, etc.). Furthermore, it is possible to put your contribution as a Java-applet on a website for everybody who wants to play against it.

When you write a RoShamBo program you must keep the following in mind. From a mathematical point of view, the best approach is to play randomly (with equal probability on the three gestures). In the long term, nobody can beat you

then. However, this does not help you in a competition like this, because we do not play long enough. Therefore, you should try to predict the moves of your opponent and react on that, or you should try to be smarter than your opponent.

#### HOW DO YOU PARTICIPATE?

For more information surf to <http://www.cs.unimaas.nl/~donkers/games/roshambo03> and read the instructions. On this site you will also find links to background information on computer-RoShamBo.

Inform us as soon as possible, before September 1, 2003, by an email to [roshambo@icga.org](mailto:roshambo@icga.org) that you are going to participate in the competition (subject: participation roshambo).

Your submission should be received before November 1, 2003, the competition will be held on November 21 and the champions are honoured on November 23 at the Computer Olympiad in Graz.

#### WHO IS ORGANIZING THIS?

This Open Competition Computer Roshambo 2003 is organized by the Institute for Knowledge and Agent Technology IKAT of the Universiteit Maastricht and the International Computer Games Association ICGA.

For questions and remarks mail to: Jeroen Donkers ([roshambo@icga.org](mailto:roshambo@icga.org)).

### CONFERENCES, SYMPOSIA WORKSHOPS

Below, the reader finds a list of conferences and websites or addresses for further information.

#### MAY 5-7, 2003

Atlantic Web Intelligence Conference (AWIC'03). Madrid, Spain,  
<http://nova.ls.fi.upm.es/AWIC03>

#### JUNE 2-5, 2003

Intelligent Information Systems 2003 (IIS'03). Zakopane, Poland.  
<http://iipwm.ipipan.waw.pl>

#### JUNE 9-11, 2003

16th Bled Electronic Commerce Conference. Conference theme: e-Transformation. Bled, Slovenia.  
<http://ecom.fov.uni-mb.si/>

#### JUNE 18-20, 2003

The 10th Colloquium on Structural Information and Communication Complexity (SIROCCO 2003). Umea, Sweden  
<http://www.informatik.uni-halle.de/sirocco2003/>

#### JUNE 23-26, 2003

The 2003 International Multiconference in Computer Science and Computer Engineering (14 Joint Int'l Conferences). Las Vegas, Nevada, USA.  
<http://www.ashland.edu/~iajwa/conferences/>

#### JUNE 23-26, 2003

Fifth International Conference on Case-Based Reasoning. Trondheim, Norway.  
<http://www.iccbr.org/iccbr03>

#### JUNE 23-27, 2003

24<sup>th</sup> International Conference on Application and Theory of Petri Nets (ICATPN 2003). Eindhoven, The Netherlands.  
<http://www.tue.nl/atpn2003/>

#### JUNE 29, 2003

A workshop on Logic and Communication in Multi-Agent Systems (LCMAS). Eindhoven, the Netherlands.  
<http://www.win.tue.nl/~evink/lcmas03.html>

#### JUNE 30-JULY 4, 2003

30th International Colloquium on Automata, Languages and Programming (ICALP 2003). Eindhoven, The Netherlands.  
<http://www.win.tue.nl/icalp2003>

#### JULY 1-2, 2003

The 8th International Working Conference on the Language-Action Perspective on Communication Modelling (LAP 2003). Tilburg, The Netherlands.  
<http://www.uvt.nl/lap2003>

#### JULY 7-9, 2003

The annual ICIS International Conference on Artificial Intelligence and Neural Networks (AINN'2004). Çanakkale, Türkiye.  
<http://icis.comu.edu.tr/>

#### July 10-12, 2003

Smart Adaptive Agent Applications (SA3). Joint ALAD and EUNITE Workshop at the EUNITE 2003 conference. Oulu Finland.  
<http://www.eunite.org/eunite/events/eunite2003/eunite2003.htm>

#### JULY 14-17, 2003

3rd International Symposium on Imprecise Probabilities and Their Applications (ISIP TA '03). Lugano, Switzerland.  
<http://www.sipta.org/~isipta03>

**JULY 21-25, 2003**

11th International Conference on Conceptual Structures (ICCS 2003). Dresden, Germany.

**AUGUST 13-15, 2003**

16th International Conference on Parallel and Distributed Computing Systems (PDCS-2003). Atlantis Hotel, Reno, Nevada, USA

<http://www.isca-hq.org/PDCS-2003-call.htm>

**AUGUST 18-29, 2003**

The Student Session of the 15th European Summer School in Logic, Language and Information (ESSLI-2003). Vienna, Austria.

<http://www.science.uva.nl/~bcate/essli03>

**SEPTEMBER 3-5, 2003**

7th International Conference on Knowledge-Based Intelligent Information & Engineering Systems (KES'2003). Oxford, United Kingdom.

<http://www.brighton.ac.uk/kes/kes2003/>

**SEPTEMBER 4-6, 2003**

DiaBruck 2003. The seventh workshop on the Semantics and Pragmatics of Dialogue (SEMDIAL). Saarland University, Germany.

<http://www.coli.uni-sb.de/diabruck/>

**SEPTEMBER 9-12, 2003**

International Conference TABLEUX 2003. Automated Reasoning with Analytic Tableaux and Related Methods. Roma, Italy.

<http://pop.dia.uniroma3.it/mailman/listinfo.cgi/tab03>

**SEPTEMBER 15-17, 2003**

Fourth International Working Conference on Intelligent Virtual Agents (IVA2003). Kloster Irsee, Germany.

<http://www.sigmedia.org/iva03>

**SEPTEMBER 15-18, 2003**

The 26th German Conference on Artificial Intelligence (KI-2003). Hamburg, Germany.

<http://www.ki2003.de>

**SEPTEMBER 18-21, 2003**

First Order Logic 75 (FOL75). Berling, Germany.

<http://www.fol75.philolog.ruc.dk/fol75welcome.html>

**SEPTEMBER 22-26, 2003**

The 14th European Conference on Machine Learning (ECML). Cavtat-Dubrovnik, Croatia.

<http://www.cs.kuleuven.ac.be/conference/ecmlpkdd/>

**SEPTEMBER 25-26, 2003**

Fourth workshop on Inference in Computational Semantics (ICoS-4). Nancy, France.

<http://www.loria.fr/~areces/ICoS-4>

**OCTOBER 13-17, 2003**

IEEE/WIC International Conference on Intelligent Agent Technology (IAT 2003). Beijing, China.

<http://www.comp.hkbu.edu.hk/IAT03>

**OCTOBER 15-18, 2003**

Fourth Annual Optical Networking and Communications Conference (OptiComm 2003).

Dallas, Texas.

<http://www.opticomm.org>

**OCTOBER 23-24, 2003**

15<sup>th</sup> Belgian-Dutch Conference on Artificial Intelligence (BNAIC 2003). Nijmegen, The Netherlands.

<http://www.snn.kun.nl/bnaic/>

**OCTOBER 28-31, 2003**

The 2003 IEEE Symposium on Visual Languages and Formal Methods (VLFM '03). Auckland, New Zealand.

<http://www.cs.dal.ca/HCC03/VLFM/>

**NOVEMBER 3-5, 2003**

Eighteenth International Symposium on Computer and Information Sciences (ISCIS'03). Antalya, Turkey.

<http://www.iscis03.metu.edu.tr/>

**NOVEMBER 4-7, 2003**

The Second International Symposium on Formal Methods for Components and Objects (FMCO 2003). Leiden, The Netherlands.

<http://fmco.liacs.nl/fmco03.html>

**NOVEMBER 19-22, 2003**

ICDM '03: The Third IEEE International Conference on Data Mining. Melbourne, Florida, USA

<http://www.cs.uvm.edu/~xwu/icdm-03.html>

**NOVEMBER 22-30, 2003**

The 11th World Computer Chess Championship 2003 (WCCC). Graz, Austria.

<http://www.graz03.at/servlet/sls/Tornado/web/2003/content/6A8AE675BEC0AF00C1256B0E00478EC6>

**NOVEMBER 23-27, 2003**

The 8<sup>th</sup> Computer Olympiad. Graz, Austria.

<http://www.cs.unimaas.nl/olympiad2003/>

**NOVEMBER 24-27, 2003**

The 10th Advances in Computer Games Conference (ACG10). Graz, Austria.

<http://www.cs.unimaas.nl/ICGA/acg10/>



For our research project *Distributed model based diagnosis and repair*, funded by the Dutch Technology Foundation STW, we are looking for

### three Ph.D. students

to participate in this project, which is a joint cooperation between Utrecht University (Group Intelligent Systems), Universiteit Maastricht (Institute for Knowledge and Agent Technology), Delft University of Technology (Group Parallel and Distributed Systems) and the National Aerospace Laboratory NLR. The ultimate goal of the project is to develop diagnostic methods for distributed multi-agent systems extending the existent model-based diagnosis approach for single-agent systems.

In this project we distinguish three research tracks that will be the topic of research for the participating academic partners; these tracks concern the extension of existing diagnostic techniques with special attention to

- *Negotiation and communication in a multi-agent context*  
This track concentrates on the development of communication protocols and in particular the support of negotiation schemes in multi agent systems to handle inter-agent conflicts.
- *Conflict detection in a multi-agent context*  
The main topic in this track is the development of robust and efficient methods for the detection of resource and goal conflicts in multi-agent systems.
- *Coordinated replanning and plan repair in a multi-agent context*  
To repair observed abnormalities in the behaviour and plans of multi-agent systems coordinated replanning methods and repair actions need to be applied. The research in this track aims at the development of adequate and efficient coordinated (re)planning techniques.

These tracks will be integrated in an air traffic control (ATC) application. This application (a distributed system for dynamic arrival and departure scheduling on airports) will be developed in close cooperation with researchers from the NLR.

For the research tracks mentioned above we are looking for

- A PhD student (4 year) in the area of multi-agent diagnosis, in particular the *negotiation and communication aspects*. You will be employed at Utrecht University, Faculty of Mathematics and Computer Science, Intelligent Systems Group.  
Supervisor: prof. dr. J-J. Ch. Meyer, phone: 030 2531454, email: [jj@cs.uu.nl](mailto:jj@cs.uu.nl)
- A PhD student (4 year) in the area of multi-agent diagnosis, in particular the *conflict detection aspects*. You will be employed at Universiteit Maastricht, Faculty of General Sciences, Institute for Knowledge and Agent Technology (IKAT).  
Supervisor: dr. N. Roos, phone: 043 3882022, email: [Roos@cs.unimaas.nl](mailto:Roos@cs.unimaas.nl)
- A PhD student (4 year) in the area of multi-agent diagnosis, in particular the *coordinated replanning and repair aspects*. You will be employed at Delft University of Technology, Faculty Information Technology and Systems, Group Parallel and Distributed Systems.  
Supervisor: dr. C. Witteveen, phone: 015 2782521, email: [witt@cs.tudelft.nl](mailto:witt@cs.tudelft.nl)

Further information about the PhD positions in these research tracks can be obtained from the supervisors mentioned above. General information about the project can be obtained from the project leader of the STW-project, dr. C. Witteveen, phone: 015 2782521, email: [witt@cs.tudelft.nl](mailto:witt@cs.tudelft.nl), and via the webpage <http://www.pds.twi.tudelft.nl/cabs/stw/>

Applications should be sent, preferably by e-mail, by *June 8, 2003* to the supervisor(s) of the research track(s) you are interested in.



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