NEWSLETTER

AI Assessment Netherlands Universities

Some Trends in Funding AI Research

ICIS Val Monte Event

News from the Belgium-Netherlands Association for Artificial Intelligence

AI Assessment in The Netherlands has only Winners

Editor-in-chief

On Friday, February 29, 2008 the Assessment Committee for bachelor and master courses in the field of AI in The Netherlands presented their results. The Committee was established by the QANU (Quality Assurance Netherlands Universities) and consisted of prof.dr. W.A. Wagenaar (chair), prof.dr. W. Daelemans, prof.dr. A. Nowé, prof.dr. F.J.M.M. Veltman, ir. E.M. van de Vrie, Ms. E. van der Vaart (student member), and Ms. F. Boschman (student member, replacing Van der Vaart for the RUG assessment). Secretary of the committee was J.W.M. Meijer of the QANU office.

In total 12 courses were assessed, namely 5 bachelor AI courses (VU, RUG, UM, UU, and RUN) and 7 master AI courses (2 at the tUL, the Transnationale Universiteit Limburg, but in practice given by the UM, 2 at the RUG, and 1 each at VU, UU, and RUN). The UvA , though participating in KION (Kunstmatige Intelligentie Opleidingen Nederland), did not participate in this QANU assessment.

For the evaluation 6 main topics were assessed (targets, programme, personnel, infrastructure, internal quality care, and results), in total consisting of 21 subtopics. For the subtopics a 4-point grading scale was used (insufficient, sufficient, good, excellent), whereas the main topics only had a dichotomy grading (sufficient or insufficient).

The most important result is that all 12 courses scored sufficient on all 6 main topics! The committee intentionally refrained from giving a ranking.

A few observations by the committee were the following. First, there is a large diversity in the programs of the different courses, notwithstanding the common KION framework. Second, the committee notices that there is hardly any mobility by the students between universities, even after the bachelor phase, maybe partly because of the diversity of the programs. The committee regrets this low mobility. Third, as part of the assessment the committee has studied and evaluated some hundred bachelor and master theses. The committee was pleased with the high quality observed.

All in all I feel that the report shows that the quality of AI education in The Netherlands is of a very good to excellent level. Nevertheless, the number of students studying AI bachelor or master courses in The Netherlands is still rather low. So let this assessment report be a strong motivation to put more energy in the acquisition of more AI students.

The complete report is published by QANU (2007) under the title *Onderwijsvisitatie Kunstmatige Intelligentie*, and will be made available in due course on the QANU website. For more information, see the QANU website http://www.qanu.nl, or send an email to info@qanu.nl.

Let me finally take the opportunity to say goodbye to Edwin de Jong. Edwin recently decided to leave Utrecht University to devote all his time to his company. As a consequence he left the BNVKI Board, in which he had a large input. Of course we all remember him also as co-organiser of BNAIC 2008.

Moreover, before becoming member of the Board in 2004, Edwin was already a very active member of the editorial team of the BNVKI Newsletter since 1998.

On behalf of the BNVKI Board and the Editorial Board I thank Edwin for his many activities to the profit of our AI community. Edwin, thanks a lot and good luck in your future work!
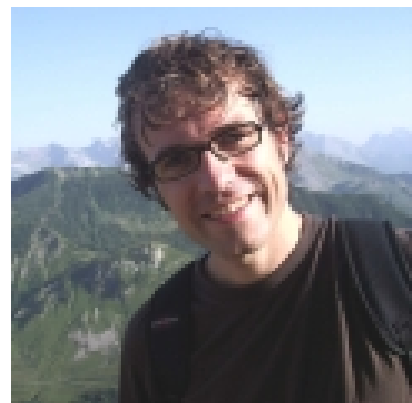
The photograph on the front cover is by Jaap van den Herik, and on page 16 by Fabienne Wink (Audiovisuele Dienst Defensie).

Front cover: Prof. Wagenaar handing over the first copy of the assessment report to dr. Jan Veldhuis, chairman of the Board of QANU.

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

BNVKI-Board News

Antal van den Bosch

The BNVKI is an association for every person in the Low Countries who is professionally involved in artificial intelligence, either academically or industrially. As I have written before, we have an active interest in welcoming industrial researchers and developers as members and participants in our events. At the past BNAICs, for example, this has materialized in the form of "industrial tracks" organized by D-CIS Lab, and we are very happy to see papers with an industrial origin being presented in the main sessions as well. Many of the companies involved in BNVKI have warm bonds with academia, often because it was their origin (the first example to think of was, probably, Pieter Adriaans' Syllogic). Our students are another reason for a good connectivity between universities and companies due to their internships and external thesis projects; it is also in these companies that many of our students find employment.

To all industrial members and other interested parties, the board would like to point out that the newsletter offers space for product and job advertisements. For more information, see page 23 of this newsletter.

In the mean time, the board has said goodbye to long-time board member Edwin de Jong. Edwin, who also co-organized BNAIC-2007 with Mehdi Dastani, will be dearly missed, but in the spirit of the above, we are confident we will see Edwin back in his capacity of industrial AI researcher!

Antal van den Bosch
Appointed to Full Professor of
Memory, Language and Meaning

The Editorial Board

Antal van den Bosch has been appointed as from As from January 1, 2008, Antal van den Bosch has been appointed to full professor of *Memory, Language and Meaning* at Tilburg University. Van den Bosch performs research in the field of modelling the relation between language and meaning using computers. He focuses on the development of self-learning language systems that function without pre-programmed linguistic knowledge.

Noteworthy is that the chair of Antal van den Bosch not only addresses traditional research questions on computational linguistics, but also new ones. Whereas traditional computational linguistics concerns the modelling of the relation between language and meaning (in both directions: understanding and generating language) based on explicit knowledge, Van den Bosch focuses also on implicit language processing models. Herein only the relation between language utterances is modelled, while their meaning is implicitly enclosed. Self-learning language systems without explicit linguistic knowledge (e.g., concerning the grammar) only use computer memory to store examples. With these examples the new systems tackle new linguistic situations. The research on such modelling yields, besides theoretical insights into linguistic issues, systems that can, for example, automatically translate or discover errors in texts. For this type of research Van den Bosch received a VICI-grant from NWO in 2005, a grant meant for excellent researchers.

Van den Bosch further works on text mining, the automatic disclosure of information and knowledge from texts. Using intelligent mining and search methods, historic archives or knowledge of organisations can be disclosed. Van den Bosch has the ambition to make such knowledge available for everyone as much as possible.

Common sense
Two other projects of Van den Bosch are, first, the gathering of 'common sense' knowledge. Herein knowledge of the world, like "a cat has a tail", is gathered by volunteers via a web site. Such knowledge is necessary to understand language, even though expert language users are not aware of this. Furthermore, Van den Bosch uses self-learning systems to simulate spelling changes in a language and to observe unexpected side effects in the learnability of the language's pronunciation and morphology system.

Antal van den Bosch (1969, Made) studied Arts at Tilburg University, with specialisation Language and Computer Science. He performed his Ph.D. research at Maastricht University on *Learning to pronounce written words: A study in inductive language learning* (cum laude). He was research assistant at the Tilburg University and the Université Libre de Bruxelles, and postdoc researcher, Academy fellow of the KNAW, assistant professor and associate professor at the Tilburg University. Since two years he is also guest professor at the University of Antwerp.

[*Translated, with permission, from a press release from the Tilburg University, of December 13, 2007; see* http://webapp.uvt.nl/ fsw/spitsjohn. nb_lib.frmToonPersbericht?v_id=14113]

Some Trends in Funding Artificial-Intelligence Research

Richard Starmans
Utrecht University

INTRODUCTION
Monitoring trends in computer-science research need not exclusively be limited to identifying research themes or topics, performing citation analyses or measuring and analyzing scientific output. Scrutinizing science will not yield a full-fledged picture without considering the external environment in which the research process takes place; its institutions, stakeholders and their interests and roles, including different ways of funding. How does this environment impinge on the current state of affairs (current research population, perceived scientific or societal relevance of certain research themes, etc)? Or, more modestly, how do research areas of interest differ with respect to certain characteristics of this environment, that are considered important or problematic by some of these stakeholders? Dealing with these issues may not only result in a more thorough understanding and assessment of the current state of affairs in a

research area, it may also facilitate policy makers and researchers to better anticipate on coming developments, both opportunities and threats. Regarding the research environment of computer science we start with three rather uncontroversial observations.

First and foremost, we have witnessed in the last decade an increasingly complex research environment with respect to institutions organizing the research and/or providing the financial means to conduct it. In their "Assessment of Research Quality in Computer Science" (2004) QANU, on behalf of VSNU, outlined several initiatives such as the national research agenda NOAG-i (2001), the start of BSIK-consortia, special interest programs of NWO and the fifth framework of the EU. In the meantime NOAG-ict (2005) has been launched, the Open Competition gained more significance as well as many thematic programs from NWO; new BSIK consortia were established, financed by the earning of the Dutch national gas reserves and the sixth and seventh framework of the EU came into view. This list could easily be extended with initiatives like SMARTMIX, GATE and many more. And, for the near future, the current administration is expected to transfer substantial amounts of money from the first- into the second-money flow. Be this as it may, the plethora of funding programs or opportunities, often based on (international) competitions, makes finding and acquiring these means all the time more an area of expertise in its own right, and even invoked the founding of small commercial agencies offering their services to the research community.

A second characteristic of the field is that computer science, not unlike most of the exact sciences, finds it increasingly hard to get Dutch students interested to step into a four years Ph.D. track. For a part this is due to the fact that graduates find more attractive employers, immediately after their graduation, rather easily. For another part, it can be explained by the small numbers of graduates in certain disciplines. As a result, in some exact disciplines the majority of the Ph.D. research is actually being conducted by foreign Ph.D. students, who visit The Netherlands for four years, and return once having obtained their Ph.D.

Thirdly, in many exact or technical sciences, including computer science, female researchers typically are strongly underrepresented. Despite a long tradition of governmental propagation in encouraging woman to get enrolled into the exact sciences, the share of woman in student populations is often hardly ten or fifteen percent. To which extent this situation should be considered problematic or demands for immediate and stronger measures, is a matter of opinion of course, but

considering the small numbers of female students finishing their masters in the exact or technical sciences, one could hardly expect the population of Ph.D. students in physics, chemistry, mathematics or computer science to show a more balanced view.

AIM

In this paper, we confine ourselves to Ph.D. research in Information and Knowledge systems (IKS) and in Artificial Intelligence (AI). The latter is here considered to be a subset of the former. The main aim is to find out if and to what extent the aforementioned characteristics are recognizable in and relevant for the IKS field in general and the AI field in particular.
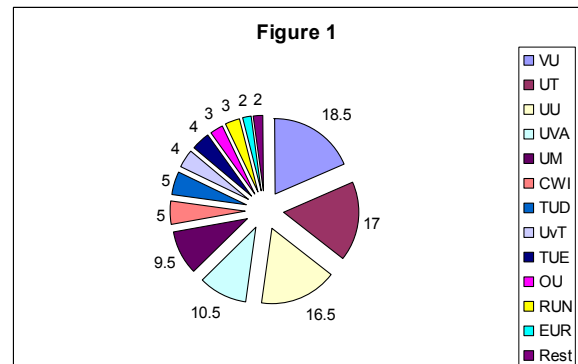
To this aim we studied project-data of over 375 IKS-research projects, all conducted between 1998 and 2007, or currently being conducted in The Netherlands by Ph.D. students participating in the Dutch Research School for Information and Knowledge Systems (SIKS). Data were provided by the administrative offices of the participating universities and were enriched with data obtained from the SIKS-monitor, a large-scale continuous survey among the Ph.D. researchers, explicating the research-profiles of all individual researchers and the structure of the IKS field in The Netherlands.

Among other things we registered for each project:

- on which formal money flows the project was based;
- which stakeholders / third parties were involved and how;
- how the research funding was acquired (internal, external competition, no competition, other allocation mechanisms);
- which financial conditions were reported (matched funding, co-funding).

The population we studied is not a full representation of the entire IKS research in The Netherlands, but sufficiently large for our exploratory purposes.

Figure 1 provides a so-called "exploded pie-chart", that should be read clockwise to be in accordance with the legend. It shows the relative importance of the universities in the population.

Figure 1

Given the chosen objective and the population, we try to answer the following five questions:
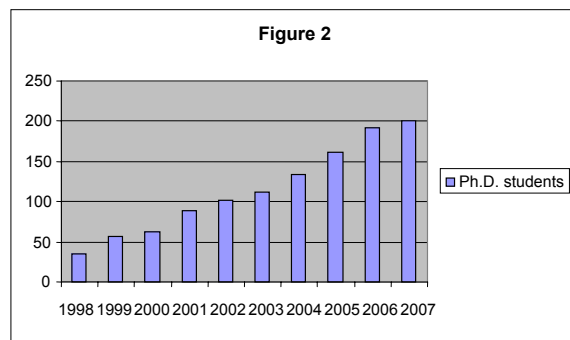
- In what way could IKS research in general and AI research in particular benefit from the increase of funding money in the period 1998-2007?
- In what way did IKS research in general and AI research in particular depend on first, second and third money flow in the period 1998-2007?
- In what way did IKS research in general and AI research in particular depend on funding from the European Committee in the period 1998-2007?
- How did the research population look like in the period 1998-2007 with respect to the proportion of Dutch and foreign researchers?
- How did the research population look like in the period 1998-2007 with respect to the proportion of male and female researchers?

The period of ten years does enable us to establish some trends and look for significant differences over the years. Therefore, nearly all frequencies and percentages we provide are based on input cohorts; that is, they are based on new projects entering the school in each specific year.

MAIN RESULTS

In this short paper we will only provide some straightforward and general conclusions for the IKS field and the AI research and compare them with earlier findings reported in (Starmans and Meyer, 2006). First and foremost, research in IKS flourishes, witnessing a spectacular growth of Ph.D. projects and completed dissertations. Figure 2 shows a strong increase of IKS-research projects conducted at Dutch universities in the last decade. The chart is based on the average number of registered Ph.D. students per year. Even if we acknowledge that the IKS field might be somewhat underrepresented in our data with respect to the late nineties, this will

not brush away the strong rise of the last five years. Starting with 35 Ph.D. students in 1998, currently over 200 researchers are conducting IKS research. The real rise in projects started in 2001 but has stopped in 2007 and it seems the population has stabilized in 2008.
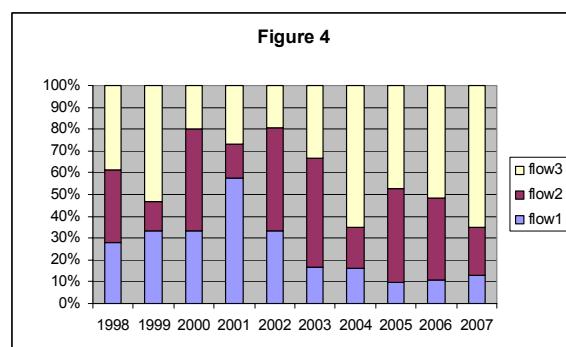
Figure 2

(chart: Ph.D. students, 1998–2007, values rising from ~35 to 200)

With a time delay of 4 to 5 years, the effects are visible in the number of successfully defended dissertations, displayed in Figure 3.

Figure 3
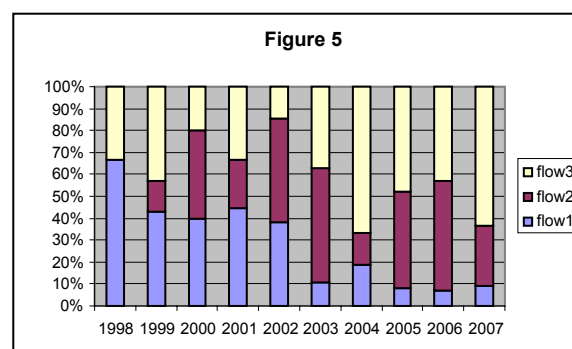
(chart: Ph.D. defences and Cumulative, 1998–2007)

Obviously, this rise in projects is only possible with a substantial raise of funding sources, which we sketched earlier. We tracked the relative importance of these three money flows over a period of ten years, resulting in the stacked bar charts of Figure 4 and Figure 5, which for our purposes are quite illustrative. Both are based on input-cohorts, representing the new projects, starting in a particular year. Unlike Figure 2 they are not based on the average number of registered Ph.D. students per year, representing the "actual population", which would here serve as an unwanted "moving-average", veiling the yearly fluctuations in the different types of funding.

Figure 4 deals with the entire IKS field and shows a dramatic decrease in first-money flow financed projects over the last few years.

Figure 4

(stacked bar chart: flow3, flow2, flow1, 1998–2007)

It dropped from nearly 60% in 2001 to only 10% in 2005. A closer look at the data confirms that this trend is only slightly attributable to the rise in second- and third-money flow projects. Also the absolute numbers confirm that universities more and more do not spend their first-money flow resources to fund Ph.D. research. This applies to the entire IKS field, but as Figure 5 points out even stronger to the AI field where the percentage new projects funded by first-money flow was less than ten percent for three years in a row. In 2007 this decline has stopped. It stabilized at 12 % for IKS research and nearly 10% for AI research. Figures 4 and 5 also show considerable fluctuations in NWO-funding, but in general the share of second-money flow funding appears rather stable and we should not overrate the significance of the decline in 2007. The growth of NWO and STW-funded research is proportional to the growth of the population of all projects. So, combining Figure 2 and Figure 4 we can infer that the absolute growth of second-money flow funding has stopped, but its share is quite substantial! Currently, this share is 35%.

Figure 5
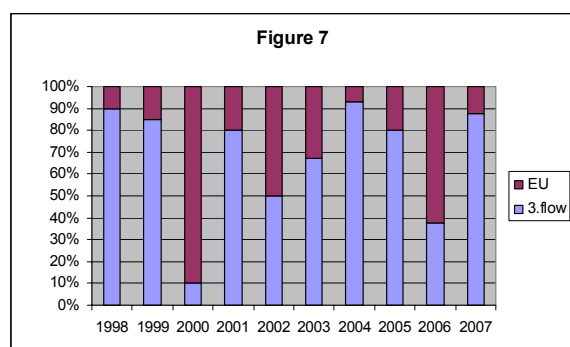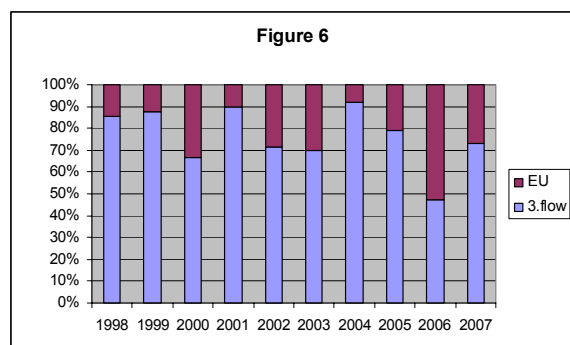
(stacked bar chart: flow3, flow2, flow1, 1998–2007)

It also appears that in the second-money flow, there are relatively few STW-financed projects; the vast majority is fully NWO-funded. Restricting ourselves to the last five years, we observe that in the second-money flow IKS research depends heavily on

- The Open competition;
- Personal programs (VIDI, VICI, in the recent past: PIONIER);
- Special-interest programs like TOKEN (Toegankelijkheid en Kennisontsluiting in Nederland), CATCH (Continuous Access To Cultural Heritage), JACQUARD (Joint Academic and Commercial Quality Research and Development in Software Engineering), CLS (Computational Life Sciences).

A closer look at the data shows a noticeable difference with earlier findings reported in (Starmans and Meyer, 2006) Several special-interest programs which were highly relevant for IKS research have stopped or do not finance new projects anymore, which for the main part explains the decline in second-money flow funding in 2007.

Regarding the observed increase of third-money projects, Figure 6 (IKS field) and Figure 7 (AI field) show that this rise is not due to participation in European projects. This funding source plays a very modest role, especially in AI research. The rise we observed in 2006 does not seem to sustain today.

Figure 6

Figure 7

Interestingly, the rise of third-money flow based projects is not caused by cooperation between research groups and individual companies either. Contract research, based on bilateral agreements between a company and a research group c.q. researcher as to financing Ph.D. research is hardly
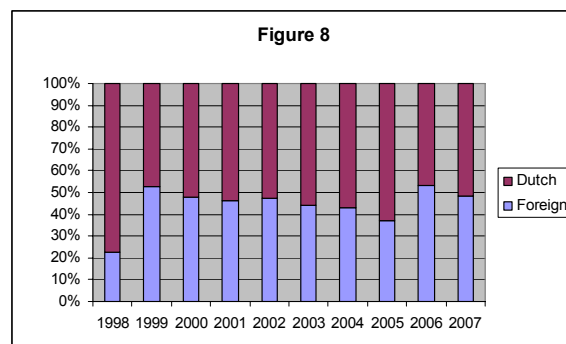
manifest in the IKS field and AI field as represented by our data. A closer look at the data shows that the real impulse to third-money flow funded Ph.D. research is due to the installation of the aforementioned BSIK consortia.
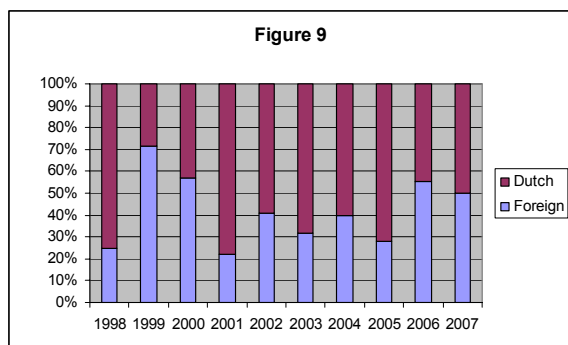
In 2003, an ambitious program to subsidize investments in knowledge infrastructure (BSIK) was created. The BSIK scheme aims to bring together parties from public research and industry into BSIK consortia and support their joint research efforts with funding of up to 50 percent. A total budget of EUR 802 million is available for research proposals focusing on one of five multidisciplinary themes, which are considered to be highly relevant for the economy and the Dutch society as a whole: information and communication technology is one of these themes.

In fact the following four BSIK consortia substantially triggered the rise of third-money flow in the last 5 years: BRICKS (Basic Research in Informatics for Creating the Knowledge Society), ICIS (Interactive Collaborative Information Systems), MULTIMEDIAN (Multimedian Netherlands) and BIORANGE (BioInformatics).

However, in 2007 it appeared that these sources are drying up and the relatively strong position of third-money flow is actually due to other programs, including SMARTMIX, GATE and subsidiary programs from foreign countries, allowing their students to do a Ph.D. research in Europe.

With respect to the influence of foreign Ph.D. students in the IKS field, Figure 8 shows a remarkable stability over the years. Small fluctuations in the subsequent input cohorts result in a percentage of about 55% of Dutch students over a long sequence of years. So the strong increase in money and projects did not reduce the share of Dutch students in IKS research. Only in 2006 the number of new foreign students exceeded the number of new Dutch students. Figure 9 depicts the AI field and shows stronger fluctuations, but the altogether picture is quite similar.

Figure 8

Figure 9

In the last couple of years we counted over 40 different nationalities in our research population, originating from all continents. Figure 10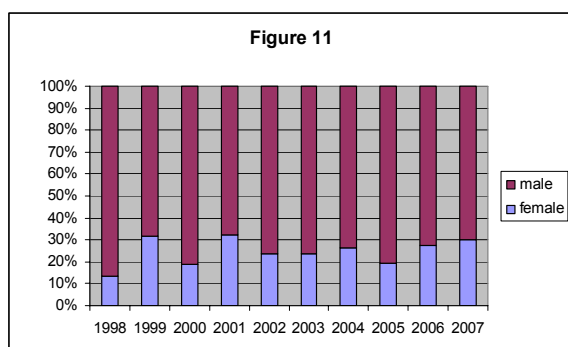 shows the top-10 of foreign countries, bringing in Ph.D. students into the Dutch IKS field and building up about 65% of all foreign students in our population.
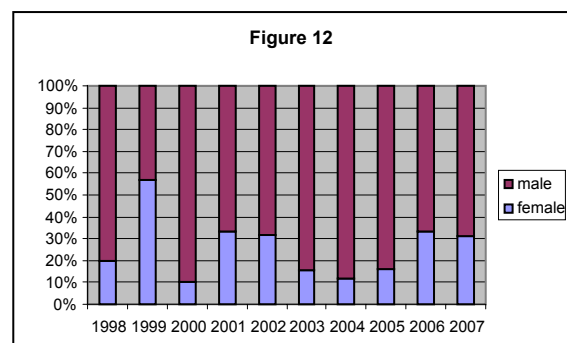
Figure 10

Finally, we will have a quick look at the proportion of female researchers. Figure 11 and Figure 12 show the distributions for the IKS field and the AI field, respectively.

Figure 11

In the IKS field the proportion of female researchers ranges from 20 to 25 percent for many years; without doubt an altogether different picture

from what we might expect in an exact science. With respect to gender differences in AI we saw a decline of new female students with a minimum of 12% in 2004, but a substantial improvement in 2006 and 2007 with percentages over 30%. However, it should be noticed that these rather high percentages in IKS research and AI research are for the main part due to female foreign students entering the school.

Figure 12

In fact, in the female IKS population, the percentage of foreign students is 58%. In the AI field this is even stronger: nearly seven out of ten female AI-Ph.D. students is foreign.

CONCLUSIONS

In 2008 the general picture regarding research funding in IKS research reconfirms some of the trends established in (Starmans and Meyer, 2006) with a few interesting adjustments. First and foremost, we observe an impressive growth of Ph.D. projects and finished dissertations, but for the main part this research is based on *non-structural* funding. The drastic decline of first-money flow that started 5 years ago, now stabilizes in 2008. In AI it didn't even reach 10% for three cohorts in a row.

With respect to NWO-funding we notice strong fluctuations between cohorts which are confirmed by the absolute numbers, but over the last six years the growth is proportional to the growth of the population. A little worrisome is the fact that several successful programs, which caused the high share of second-money flow projects thus far, have ended or at least do not bring in new projects. Continuation in the next period is not guaranteed.

The noticeable raise of third-money flow is not caused by funding programs of the EU. The small raise we observed in 2006 doesn't seem to sustain. In AI research its influence is hardly worth mentioning. Evidently, the strong position of third-money flow is not caused by contract research between a company and a research group or researcher either. Bilateral agreements as to financing Ph.D. research are hardly manifest in the

IKS field and AI field. The BSIK consortia are for the main part responsible for the strong position of third-money funding. However, the absolute numbers show that several highly successful programs have nearly dried up.

Of course, there are some obvious concerns with respect to third-money projects. Unlike first-money research, they have several stakeholders and they tend to favour more applied research. And, they often demand matched funding, which means that faculties, in order to meet this financial prerequisite, temporally buy out their permanent staff, to supervise and participate in the more applied third-money flow projects. So the rise in third money flow may occur at the expense of first-money stream research.

Furthermore, the third-money flow projects depend heavily on the economic situation and there is no guarantee that BSIK consortia (or its successors) will be continued at the same level the next years. Programs like SMARTMIX or GATE are important, but not sufficient to compensate for the established trends. Successes from the seventh framework of the EU and the new Jacquard have been reported, but the results are not recognizable in the data yet.

Be that as it may, IKS research in general and AI research do not suffer from a complete lack of interest of Dutch students. At average 55% of the population comes from The Netherlands. Germany, China, but especially Romania and other former east-European countries are the main sources of research immigration. Most noticeably, the proportion of female Ph.D. students in IKS research ranges from 20-25 percent, showing a completely different picture than one is used to in the exact sciences. However, it must be said that this rather high percentage is for the main part caused by female foreign students.

REFERENCES

- NOAG-ict, (2005). Met vaste hand; nationale onderzoeksagenda informatie- en communi-catietechnologie.
- Starmans, R., and Meyer, J.-J.Ch. (2006). Funding Research in Computer Science, *BNVKI Newsletter*, vol. 23, no. 5. pp. 97-102.
- QANU (2004). Assessment of Research Quality in Computer Science, May 2004.

ICIS Val Monte Event

February 2008

*Eefje Rondeel, Niek Wijngaards, and
Eddy van der Heijden
D-CIS Lab/ TRT-NL*

At a sunny Tuesday afternoon, the first ICIS project members traveled to Nijmegen for the start of the 'ICIS Val Monte event'. Val Monte event, as the event was held at the Golden Tulip Val Monte hotel at Berg & Dal, which is situated in a beautiful environment with very nice scenery. The mid-project internal ICIS Val Monte event was organized as part of the ICIS action plan, developed by the project management team. The goal of this action plan is to provide a process with which the original mission is finalized that was stated at the start of the ICIS project, namely to become *the place to be* regarding research and application of advanced technology for interactive collaborative information systems for decision making in complex dynamic environments.

Reflecting on the previous half of the ICIS project, its many accomplishments not only involve relevant and interesting scientific results but also societal outreach and establishing its name. ICIS has already realized successful outreach to organizations such as Shell, gemeente Borsele, vts Politie Nederland, Binnenvaart, NS Reizigers, Rijkswaterstaat, Rotterdam Harbour, HBO instellingen and others. The ICIS Val Monte event is explicitly devoted to consolidating established and ongoing results, next to increasing its public profile.

Brainstorming researchers in one of the dynamic Val Monte workshops.

The action plan consists of several major activities, such as writing a scientific book and creating an appealing website for researchers, professionals and the general public. To realize the action plan,

taskforces are being created, consisting of a number of internal ICIS researchers possibly extended with external specialists. The taskforces are led by representatives from the project management team. To get started with the actual work of the major activities, the ICIS Val Monte event was organized to involve all the ICIS researchers. Although the event's workshops did not start until the early morning on Wednesday, Tuesday evening meetings were held and a nice dinner was provided in the hotel. Subsequently, a general introduction was given about the content of the different workshops by ICIS project manager Paul Burghardt. After this, everyone was given the opportunity to subscribe to the workshops, while enjoying a nice drink at the bar.

Paul Burkhardt.

The day after was a less sunny day, in contrast to the sunny ambience during the workshops. The informal atmosphere contributed to ventilating fruitful ideas; the topics varied from brainstorming about a new hot website for the ICIS project to special interest groups (SIGs) on crisis management and traffic management. Among the outcomes of the workshops were ideas, such as a 'call for problems' for the industry, which would give ICIS project members the opportunity to portray their knowledge and expertise and to challenge themselves to apply ICIS's state of the art. At the end of each workshop, the ICIS project members were given the chance to sign up for helping out on one of the topics, varying from contributing to a

'glossy' booklet about the ICIS project to helping out with developing a roadmap for ICIS.
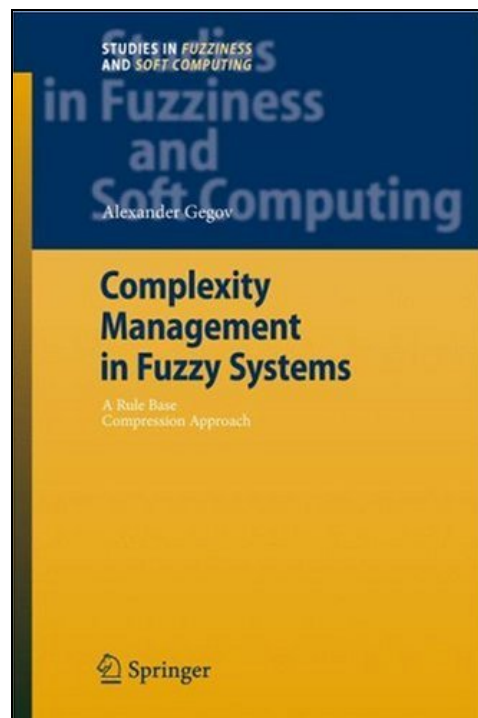
The ICIS Val Monte event, together with the ICIS Christmas event 2007, not only addresses the final part of the ICIS project and achieving its results, but also increases the coherence among the ICIS researchers, within and beyond the four research clusters. ICIS can be especially proud of the outspoken commitments of its project members to continue ICIS-inspired research, traffic SIG, crisis management SIG and other activities beyond the ICIS research program itself. To be continued!

BOOK REVIEW

Complexity Management in Fuzzy Systems: A rule base compression approach

Alexander Gegov

Reviewed by
Ann Nowé

As all rule bases, fuzzy rule bases often suffer from complexity problems as the number of rules increases. The transparency and interpretability not only tend to deteriorate, also the computational

efficiency decreases. This book provides a formal approach to clean up a fuzzy rule base. Although a brief introduction to different types of fuzzy systems (Mamdani, Sugeno, and Tsukamoto) is given, the reader is supposed to be familiar with the basics of fuzzy set theory. An overview is given of the state-of-the-art of rule-base reduction methods for fuzzy systems. A first group aims at the removing of less significant or merging of linguistic values. A second group reduces the complexity by removing less significant or fusing similar inputs. A third group is based on singular-value decomposition of the matrix representing the crisp values of the output of the system. The fourth group of methods converts the intersection-rule configuration into a union-rule configuration with a smaller number of rules. A fifth group decomposes the rule base in groups of rules, which strongly interact, neglecting the weaker interactions. Depending on the decomposition approach used, the resulting system has a distributed, decentralized, decoupled or multi-level structure. Finally a last group rearranges the inputs in such a way that the number of rules is reduced. The author concludes the overview of the state-of-the-art with a comparative study of the described methods in terms of the nature of the approach (empirical versus systematic) and the scope (universal versus limited). All techniques discussed in this overview have an approximate behaviour and lead to a reduced complexity in quantitative terms (such as the number of rules), but the qualitative behaviour (referring to issues of uncertainty or ambiguity) is unaffected.
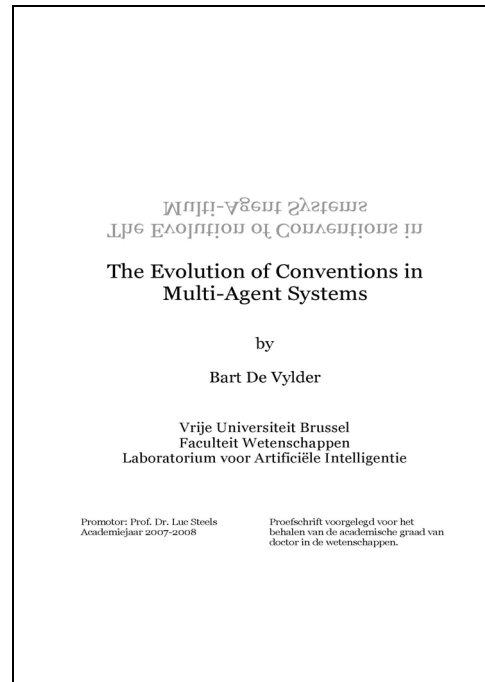
In the remainder of the book, the author presents his own approach, which is systematic, universal, yields an equivalent behaviour and which reduces the complexity both from a quantitative and qualitative perspective. The approach is based on formal properties of fuzzy rule bases, such as the rule base being complete, exhaustive, consistent and/or monotonic. Each of these properties is formally defined and illustrated on a simple clarifying example. A key issue of the approach is the representation of the rule base as a Boolean matrix and as binary relations. The book nicely describes the different formal manipulations that lead to the reduction of the rule base, and each step is clarified by an illustrative example. Whereas the first part of the book focuses on "feed-forward" rule bases, the last chapters discuss rule bases with different types of feedback. The book provides a comprehensive manual to the reduction of fuzzy rule bases of different types (Mamdani, Sugeno as well as Tsukamoto), it includes plenty of illustrative examples, clearly specified algorithms and it presents two case studies. I would like to recommend this book to anybody who is interested in building complex fuzzy systems.

The Evolution of Conventions in Multi-Agent Systems

Ph.D. thesis abstract
Bart De Vylder

A lot of conventions emerge in gradual stages without being centrally imposed. The most significant and complex example in our human society is undoubtedly human language which evolved according to our need for communication. Also in artificial multi-agent systems, e.g., mobile robots or software agents, it is often desirable that agents can reach a convention in a distributed way. To make this possible, it is important to have a sound grasp of the mechanism by which conventions arise.

In this thesis we develop a theoretical framework that enables us to examine this process carefully. We make a strict distinction between the description of the convention problem on the one hand and the solution to this problem in terms of an agent design on the other. A convention problem specifies the preconditions any type of agent must comply with. This includes (i) the space of alternatives from which the convention is to be chosen, (ii) the interaction model between the agents, which determines which agents interact at what time and

(iii) the amount, nature and direction of information transmitted between the agents during an interaction. A particular agent design solves a convention problem if a population of such agents will reach an agreement in a reasonable time, under the given restrictions.

We focus on the class of convention problems with a global interaction model: every agent is equally likely to interact with any other agent. We argue that for these convention problems the performance of an agent can be predicted by inspecting the properties of the agent's response function. This response function captures the average behavior of an agent when interacting with agents from a non-changing population.
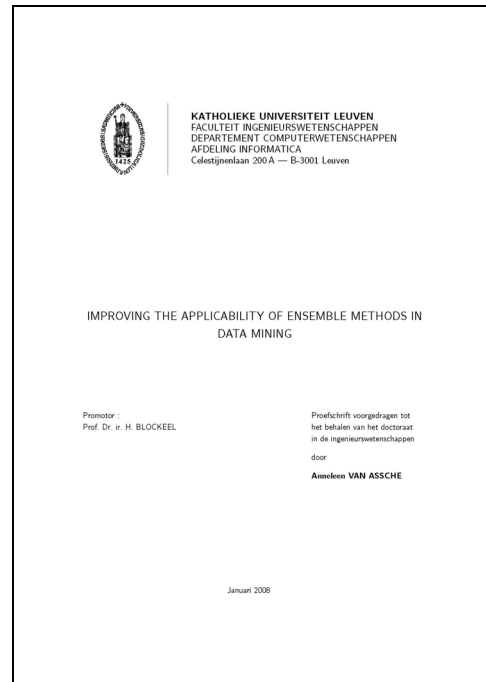
We apply this analytical technique to different sorts of convention problems. For the more simple convention problems we define general, sufficient properties which guarantee that a convention will arise after a certain amount of time when an agent possesses these. For the more difficult convention problems we confine ourselves to the construction of agents who, we can show, will solve the problem.

Finally, our framework is applied to the problem of language evolution in artificial agents. This is a complicated domain for which precise mathematical results are very difficult to obtain. We will focus on the naming game, a relatively simple instance in the paradigm of languages games. In certain instances our analysis will surface problems of convergence that have not been noticed before. This shows on the one hand that it is important to theoretically substantiate computer experiments in language evolution and on the other that the framework introduced in this thesis is very suitable to this extent.

Improving the Applicability of Ensemble Methods in Data Mining

Ph.D. thesis abstract
Anneleen Van Assche

Promotor: Prof.dr.ir. H. Blockeel (KULeuven)
Date of defense: January 22, 2008

KATHOLIEKE UNIVERSITEIT LEUVEN
FACULTEIT INGENIEURSWETENSCHAPPEN
DEPARTEMENT COMPUTERWETENSCHAPPEN
AFDELING INFORMATICA
Celestijnenlaan 200 A — B-3001 Leuven

IMPROVING THE APPLICABILITY OF ENSEMBLE METHODS IN DATA MINING

Promotor :
Prof. Dr. ir. H. BLOCKEEL

Proefschrift voorgedragen tot het behalen van het doctoraat in de ingenieurswetenschappen

door

Anneleen VAN ASSCHE

Januari 2008

In this thesis, we propose techniques to improve the applicability of ensemble methods in data mining. Ensemble methods construct a set of different predictive models whose individual predictions are combined in some manner. They have become very popular as they are able to significantly increase the predictive accuracy. On the other hand, ensemble methods also come with some disadvantages. As they involve learning a set of models, they are clearly less efficient (both concerning time and space) than a single model and moreover the resulting combined ensemble becomes much less interpretable. This dissertation describes several techniques which remedy certain drawbacks of ensembles.

Inductive Logic Programming (ILP) is a data mining technique based on first order logic, concerned with learning from relational data. It exhibits a high expressivity, allowing ILP to learn concepts that cannot be learned using less powerful data mining techniques. However, the space of all possible models is also very complex and learning a good model (and even more an ensemble) becomes an expensive task. This problem is approached by upgrading random forests to the first order case, reducing the space searched by the learning algorithm at each step in the learning process. As such, we are able to improve the accuracy of the model without the usual excessive time costs.

In many learning settings, comprehensibility of the obtained model is essential. As ensembles no longer exhibit this characteristic, we propose an algorithm to derive an interpretable model from an ensemble

of decision trees. The approach builds a new decision tree based on the class probability predictions of the ensemble. Hence, we aim to obtain a model which approximates the predictions made by the ensemble meanwhile being able to explain its predictions.

Finally, we focus on learning from statistics. In this learning setting, the learning algorithm is provided only with statistics of the data rather than with the individual data instances. This makes this learning setting hard for applying ensemble methods such as Bagging, Boosting and Random Forests, as they need direct access to the individual examples in order to construct the different base models of the ensemble. We propose an algorithm that simulates bootstrapping (used by Bagging and Random Forests) by sampling the statistics instead of the data and analyze this method for Bagging.
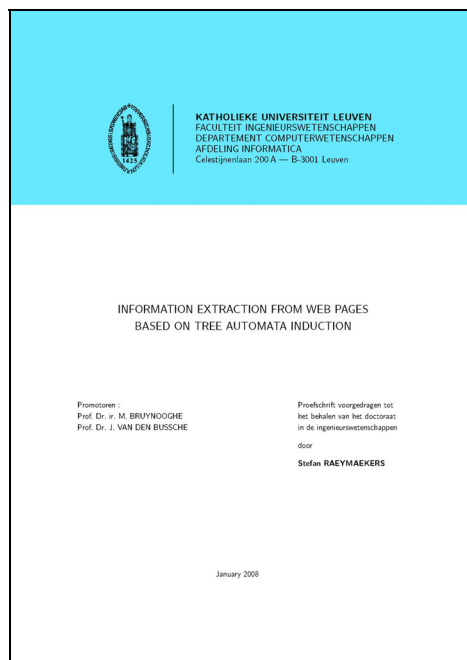
By extensive experimental evaluation of the different techniques, we show that each contributes to the applicability of ensemble methods in a particular domain of knowledge discovery.

Information Extraction from Web Pages Based on Tree Automata Induction

Ph.D. thesis abstract
Stefan Raeymaekers

Promotores: Prof.dr. M. Bruynooghe (KU Leuven) and Prof.dr. J. Van den Bussche (U Hasselt)
Date of defense: January 22, 2008

The World Wide Web is an invaluable source of information. Unfortunately, while this information is easily interpreted by a human reader, it is not straightforward to extract and process relevant data using computer programs. The aim in `Information Extraction from web pages' is to learn how to extract specific information from structured text, based on a number of examples, where an example consists of a web page with one of the occurrences of the target data indicated. Alternatively, the term `wrapper induction' is often used, where a wrapper stands for a procedure to extract data from a web page.

In short, we present in this thesis a general way to represent wrappers with tree automata and we develop a specific technique for inducing wrappers in this format, that outperforms in experiments other related state of the art techniques.

To this end we introduce and discuss an improved representation for tree automata and we elaborate on the existence, uniqueness and construction of minimal and deterministic automata. An approach to use tree automata as wrappers is presented and worked out until fit for practical use. This includes an efficient algorithm to perform extraction.

We introduce a novel algorithm for the induction of tree languages in general, not specific for wrappers. This algorithm is capable to learn from positive examples only, because it learns within a subclass of the regular tree languages that is learnable from positive examples only, in contrast to the whole class of regular tree languages. We adapt this induction algorithm for wrapper induction and extend it to a practical system, which includes choosing parameters, incremental annotation of examples, and a graphical interface.

New Research Results

Jaap van den Herik
MICC-IKAT, Maastricht

The continuous progress of new research findings goes together with three challenging questions: (1) what is fundamentally new? (2) is there a new application? and (3) is there a new perspective? If we submit these three questions to our readers together with the thirteen announcements below, and request them to make a classification, I assume that the categories (2) and (3) are receiving more votes than category (1). However, my labels are only taken for clarity of argumentation. So, two new questions come to mind: (a) are the labels well-chosen? (should not we have taken the labels:

original idea; new technological development; professional scientific research), and (b) are computers able to perform such a classification? (assuming they are, then the question is: what is the best classification?).

Recently, Louis von Ahn has launched a series of projects on answering such questions by submitting data and questions via internet to human beings who were invited to answer. Many did, and the results were overwhelming. The power of the crowd showed its strength, statistic means proved to be very valuable, and gave this method its validity. Knowing all this, I am still not tempted to ask for your opinion on the question: which thesis belongs to which category? I leave it to future researchers.

Currently, the council for education in The Netherlands is preparing some advice about future research on computers, internet, and ICT. A few AI researchers were invited to submit their ideas to a committee of the council. I understand that they are interested in audacious thoughts and predictions, since science always goes its unexpected and strong way.

For this reason I performed some thinking experiments and one of them is: which (list of) Ph.D. theses should I include in the references as example of future developments that would pave the way for the new technological developments that will have serious impact on our society. An example might be "agent-controlled car driving" (an excellent Ph.D. title with fewer than five words, see a previous announcement).

A following question is, of course, how should we tune our education to these developments? Whatever the case, I am sure that these ideas have given you food for thought and that you are convinced of the fact that scientific research will be characterized by continuous progress. So, please make your own classification and compare it with your neighbour's classification.

Finally the Editorial Board would like to congratulate the new doctores with their result and wishes them much success in their future career.

Yan Wang (January 9, 2008). *A Studio Based Approach for Business Engineering and Mobile Services*. Delft University of Technology. Promotor: Prof.dr. H.G. Sol (DUT).

Alexei Sharpanskykh (January 10, 2008). *On Computer-Aided Methods for Modeling and Analysis of Organizations*. Vrije Universiteit Amsterdam. Promotor: Prof.dr. J. Treur (VU).

Bela Mutschler (January 17, 2008). *Modeling and Simulating Causal Dependencies on Process-aware Information Systems from a Cost Perspective*. University of Twente. Promotor: Prof.dr. R.J. Wieringa (UT). Co-promotor: Dr. M.U. Reichert (UT).

Anneleen Van Assche (January 22, 2008). *Improving the Applicability of Ensemble Methods in Data Mining*. Katholieke Universiteit Leuven. Promotor: Prof.dr. H. Blockeel (KU Leuven).

Katalin Boer-Sorbán (January 25, 2008). *Agent-Based Simulation of Financial Markets: A Modular, Continuous-Time Approach*. Erasmus Universiteit Rotterdam. Promotor: Prof.dr. A. de Bruin (EUR). Co-promotor: Dr.ir. U. Kaymak (EUR).

Stefan Raeymaekers (January 30, 2008). *Information Extraction from Web Pages Based on Tree Automata Induction*. Katholieke Universiteit Leuven. Promotores: Prof.dr. M. Bruynooghe (KU Leuven) and Prof.dr. J. Van den Bussche (U Hasselt).

Vera Hollink (January 31, 2008). *Optimizing Hierarchical Menus: A Usage-Based Approach*. University of Amsterdam. Promotor: Prof.dr. B.J. Wielinga (UvA). Co-promotor: Dr. M.W. van Someren (UvA).

Ander de Keijzer (February 1, 2008). *Management of Uncertain Data: Towards Unattended Integration*. University of Twente. Promotor: Prof.dr. P.M.G. Apers (UT). Co-promotor: Dr.ir. M. van Keulen (UT).

Fenrong Liu (February 26, 2008). *Changing for the Better: Preference Dynamics and Agent Diversity*. Universiteit van Amsterdam. Promotor: Prof.dr. J.F.A.K. van Benthem (UvA). Co-promotor: Prof.dr. D.H.J. de Jongh (UvA).

Mohammad Torabi Dashti (February 27, 2008). *Keeping Fairness Alive: Design and Format Verification of Optimistic Fair Exchange Protocols*. Vrije Universiteit Amsterdam. Promotores: Prof.dr. W.J. Fokkink and Prof.dr. J.C. van de Pol (VU).

Arjen Hommersom (April 18, 2008). *On the Application of Formal Methods to Clinical Guidelines, an Artificial Intelligence Perspective*. Radboud University Nijmegen. Promotor: Prof.dr.ir. Th.P. van der Weide (RUN). Co-promotor: Dr. P.J.F. Lucas (RUN).

Peter van Rosmalen (April 18, 2008). *Supporting the Tutor in the Design and Support of Adaptive E-Learning*. Open Universiteit Nederland. Promotor:

Prof.dr. E.J.R. Koper (OU). Co-promotor: Prof.dr. P.B. Sloep (OU).

Janneke Bolt (April 21, 2008). *Bayesian Networks: Aspects of Approximate Inference*. Utrecht University. Promotor: Prof.dr.ir. L.C. van der Gaag (UU).

TWO INAUGURAL ADDRESSES

With much pleasure we announce two inaugural addresses. The first one is by Prof.dr. T.J. Grant. He is appointed (in 2004) as professor of Operational ICT & Communication at The Netherlands Defence Academy in Breda. February 20, 2008 he gave his inaugural address titled *The Softer Side of Software: Transforming Command & Control*. Professor Grant served 20 years as officer at the Royal Air Force. He was 17 years ICT-consultant (among others at the International Space Station). He did his Ph.D. in Maastricht (in 1996) under supervision of Jaap van den Herik and Patrick Hudson.

Prof. Tim Grant.

As of January 1, 2008 Dr. Antal van den Bosch, the chairman of the BNVKI, has been appointed to full professor of *Memory, Language, and Meaning* at the University of Tilburg. In a special contribution, this issue of the BNVKI Newsletter pays attention to his appointment. Here, we restrict ourselves to offering him our congratulations and announcing his inaugural address.

Prof.dr. Timothy John Grant (February 20, 2008). *The Softer Side of Software: Transforming Command & Control.* The Netherlands Defence Academy, Aula, 16.00 hours.

Prof.dr. Antal van den Bosch (October 10, 2008). *Title to be announced*. University of Tilburg, Aula, 16.15 hours.

**Section Editor
Richard Starmans**

Agent Summer School
for SIKS-Ph.D. Students

From May 5-9, 2008, the tenth edition of the European Agent Systems Summer School (EASSS 2008) takes place in Lissabon, Portugal. Details on the program are not available yet, but the program of last year's edition that took place in Durham, UK may give a first impression of the content: http://www.dur.ac.uk/durham.agents007/EASSS07/.

As a result of the cooperation between SIKS and the EASSS 2007 organisation, SIKS-Ph.D. students can participate without paying entrance fee. The summer school is part of the advanced components stage of the school's educational program and therefore Ph.D. students working in the field of agent systems are strongly encouraged to participate. However, there is a fixed number of places available for SIKS-Ph.D. students at the summer school, and therefore an early registration is required. To apply for this SIKS-arrangement related to EASSS 2008 Ph.D. students should register on the SIKS-site.

SIKS Basic Courses "Interactive Systems" and "Combinatory Methods"

INTRODUCTION

From May 19-22, 2008, the School for Information and Knowledge Systems (SIKS) organizes two basic courses "Interactive Systems" and "Combinatory Methods". Both courses will be given in English and are part of the obligatory Basic Course 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 SIKS-Ph.D. students taking the course.

Location: NH Hotel Best

Date: May 19-22, 2008

SCIENTIFIC DIRECTORS

Prof.dr. P. de Bra (TU/e), Interactive Systems; Prof.dr. G. van der Veer (OU, UT), Interactive Systems; Dr. N. Roos (UM), Combinatory Methods

PROGRAM

The program is not available yet, but may include the following topics:

Interactive Systems (May 19-20):
- Human Computer Interaction
- Man-Machine Interaction
- Adaptive Hypermedia
- Intelligent multimedia research
- Web-based Information Systems

Combinatory Methods (May 21-22):
- Neural networks
- Genetic algorithms
- Complexity of graph algorithms
- Constraint Satisfaction Problems
- Intelligent search algorithms

REGISTRATION

More details on registration will be made available in due course.

Third SIKS/BENAIS Conference on Enterprise Information Systems

For the third time, the Dutch Research School SIKS organizes the Dutch/Belgian Conference on Enterprise Information Systems (EIS). The event will take place on May 22 and 23 in Tilburg. The purpose of EIS is to bring together Dutch/Belgian researchers interested in the advances and business applications of information systems – a broad field, including topics such as Management Information Systems, E-Business, IS Analysis and Design, Requirements Engineering, Business Innovation, Knowledge Management, Business Process Management, Product Software Development, Coordination and Communication, Collaborative Information Systems, Business/IT Alignment, Architectures for IKS and many others.

EIS 2008 is organized by SIKS in cooperation with BENAIS, the local Benelux chapter of AIS and offers a unique opportunity for research groups from both the Computer Science-side and the Management-side to report research, meet and interact. EIS also includes a Doctoral Consortium. For more details, check: http://www.benais.nl/.

ORGANISATION

Hans Weigand (UvT, BENAIS), Rien Hamers (Fontys), Richard Starmans (SIKS).

IMPORTANT DATES

March 1	Submission deadline for category A and C papers
March 19	Submission deadline for category B papers
April 11	Notification of acceptance
May 22-23	EIS 2008, Tilburg, The Netherlands

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

PROGRAM COMMITTEE

Hans Akkermans (VU); Ronald Batenburg (UU); Egon Berghout (RUG); Harry Bouwman (TUD); Bert de Brock (RUG); Jaap Gordijn (VU); Paul Grefen (TUE); Jos van Hillegersberg (UT); Stijn Hoppenbrouwer (RUN); Piet Ribbers (UvT); Monique Snoeck (KUL); Yao-Hua Tan (VU); Jan Vanthienen (KUL); Roel Wieringa (UT); Hans Weigand (UvT).

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.

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.

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. See 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:

- Wil van der Aalst (TU/e)
- Rafael Bordini (Durham, UK)
- Tom Heskes (RUN)
- Maarten de Rijke (UvA)

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. More details on program and registration will be made available soon.

ANNOUNCEMENTS

Call for Participation

DIR 2008

8th Dutch-Belgian Information Retrieval Workshop

Maastricht, The Netherlands
April 14-15, 2008

The primary aim of the DIR is to provide an international meeting place where researchers from the domain of information retrieval and related disciplines, can exchange information and present innovative research.

DIR 2008 will take place in Maastricht, the Netherlands, on April 14-15, 2008, at Maastricht University.

REGISTRATION

The details are on http://www.ltci.ugent.be/DIR2008/ where you can find a registration form. The first SIKS-Ph.D. students to sign up will have their workshop fee waived on a first-come-first-serve basis.

PROGRAM

The program has not been established yet. It will be made available at the website soon. The following three talks are scheduled yet.

Invited talk: C.J. "Keith" van Rijsbergen (University of Glasgow)

Keith van Rijsbergen leads the Information Retrieval Group in the Department of Computing Science at the University of Glasgow. He is one of the founders of modern IR and the author of the seminal monograph "Information Retrieval" and more recently of "The Geometry of Information Retrieval". Further information can be found on his home page at http://www.dcs.gla.ac.uk/~keith/.

Invited talk: Hinrich Schuetze (University of Stuttgart)

Hinrich Schuetze is a professor of computational linguistics in the CS/EE department at the University of Stuttgart. He received his Ph.D. in computational linguistics in 1995 from Stanford University and worked in the areas of text mining and information retrieval at a number of research institutions and start-ups in Silicon Valley from 1995 to 2004. In 2008, his textbook Introduction to Information Retrieval will appear (Cambridge University Press, co-authors: Chris Manning and Prabhakar Raghavan). Home page: http://www.ims.uni-stuttgart.de/~schuetze/.

Industry talk: Lars De Nul (VRT-medialab)

The Flemish Radio- and Television Network (VRT) is the public broadcasting network of the Flemish Community in Belgium. One of the key tasks as public broadcasting network consists in following the relevant technological evolutions. Based on this global vision, VRT has accommodated, at the beginning of 2007, various R&D activities in the department VRT-medialab. VRT-medialab carries out research into the creation, management and distribution of media content. Its focus is on the Flemish media market, but VRT-medialab also participates in European projects.

Call for Abstracts

BENELEARN 2008

17th Annual Belgian-Dutch Conference on Machine Learning

Spa, Belgium
May 19-20, 2008

Benelearn is the annual machine-learning conference of Belgium and The Netherlands. It serves as a forum for researchers to exchange ideas, present recent work, and foster collaboration in the broad field of Machine Learning and its applications. Benelearn 2008 will be organised by the Systems and Modeling, and Bioinformatics and Modeling research units of the Department of Electrical Engineering and Computer Science and GIGA-Research of the University of Liège. The conference will take place in the Solcress seminar center, at walking distance from the center of the city of Spa located in the Belgian Ardennes.

Contributions are now being invited that are relevant to machine learning and related disciplines in a broad sense. Topics include, but are not limited to:

Kernel Methods; Web/Link Mining; Bayesian Networks; Case-based Learning; Computational Learning Theory; Data Mining; Evolutionary Computation; Hybrid Learning Systems; Inductive Learning; Learning and Ubiquitous Computing; Inductive Logic Programming; Knowledge Discovery in Databases; Language Learning; Learning in Bioinformatics; Learning for Multi-Agent Systems; Learning in Dynamic Domains; Multi-strategy Learning; Neural Networks; Reinforcement Learning; Robot Learning; Scientific Discovery; Meta-Learning; Statistical Learning; Learning for Language, Speech; Computational Models of Human Learning; Applications.

FORMAT OF THE CONFERENCE

The official language of the conference is English. The conference will include two days of technical sessions. Plenary talks will be given by internationally renowned invited speakers. Regular sessions will allow young and senior researchers from the Machine-Learning community to present their work. A poster session will be organized during break and evening hours. A social dinner is planned on the first-day evening.

SUBMISSIONS

Each submission consists of an abstract of the contribution and must be submitted online via the

Easychair submission system: http://www.easychair.org/conferences/?conf=benelearn08.

Formating instructions are available on the conference web site http://www.montefiore.ulg.ac.be/services/stochastic/benelearn08.

Abstracts will be selected for oral or poster presentation according to their relevance and available slots. Electronic versions of extended abstracts will be accessible to the participants prior to the conference and will be made publicly available on the conference web site after the conference.

The deadline for submission is April 4, 2008. Authors will be notified about the acceptance of their abstract on or before April 18, 2008. Final versions of the abstracts, if necessary, are due by April 25, 2008.

LOCATION
SolCress seminar center is located in the Belgian Ardennes, at walking distance from the center of Spa. See http://www.solcress.be/incentives/EN/home.htm.

IMPORTANT DATES
Abstract submission deadline: April 4, 2008
Notification of acceptance :   April 18, 2008
Final version of abstracts: April 25, 2008
Conference: May 19-20, 2008

CONTACT
For further information, please contact benelearn08@gmail.com or see the conference website: http://www.montefiore.ulg.ac.be/services/stochastic/benelearn08.

ORGANIZING COMMITTEE
Louis Wehenkel, Pierre Geurts, and Raphaël Marée; University of Liège, Belgium

PROGRAMME COMMITTEE
- H. Blockeel, K.U. Leuven
- G. Bontempi, U.L. Bruxelles
- W. Daelemans, Universiteit Antwerpen
- P. Dupont, U.C. Louvain
- D. Ernst, Université de Liège
- Feelders, Universiteit Utrecht
- P. Geurts, Université de Liège
- Goethals, Univ. Antwerpen
- T. Heskes, Radboud Univ. Nijmegen
- Kappen, Radboud Univ. Nijmegen
- J. Kok, Universiteit Leiden
- B. Manderick, Vrije Universiteit Brussel
- R. Marée, Université de Liège
- B. de Moor, K.U. Leuven
- M. van Otterlo, Universiteit Twente

- J. Piater, Université de Liège
- L. de Raedt, K.U. Leuven
- J. Ramon, K.U. Leuven
- Y. Saeys, Universiteit Gent
- R. Sepulchre, Université de Liège
- M. van Someren, University of Amsterdam
- Siebes, Universiteit Utrecht
- Y. Smirnov, Universiteit Maastricht
- K. Van Steen, Université de Liège
- J. Suykens, K.U. Leuven
- van den Bosch, Universiteit Tilburg
- K. VanHoof, Universiteit Hasselt
- M. Verleysen, U.C. Louvain
- P. Vitanyi, Centrum voor Wiskunde en Informatica
- L. Wehenkel, Université de Liège

Call for Papers

1st International Conference on Human-Robot Personal Relationships

Maastricht University
June 12-13, 2008

Within the fields of Human-Computer Interaction and Human-Robot Interaction, the past few years have witnessed a strong upsurge of interest in the more personal aspects of human relationships with these artificial partners. Nowhere has this strength of interest been more apparent than at Maastricht University, where the defense of a recent Ph.D. thesis, *Intimate Relationships with Artificial Partners*, attracted wide media publicity on an unprecedented scale; therefore, Maastricht University is organizing and hosting the 1st International Conference on Human-Robot Personal Relationships, during the period June 12-13, 2008.

Conference sessions are planned on the following topics:
- Robot Emotions
- Robot Personalities
- Gender Approaches
- Affective Approaches
- Psychological Approaches
- Sociological Approaches
- Roboethics
- Philosophical Approaches

We welcome contributions in the form of an extended abstract and/or paper.

IMPORTANT DATES
- Deadline for extended abstracts (max 1500 words) or papers: March 31, 2008

- Notification of acceptance: April 18, 2008
- Deadline for final versions: May 28, 2008

CONFERENCE PROCEEDINGS

Submissions will be peer-reviewed. A selection of papers will be considered for inclusion in an international volume of the proceedings to be published in the Critical Studies series (Editions Rodopi, Amsterdam/New York). The language of the conference is English.

SUBMISSION ADDRESS

humanrobot@micc.unimaas.nl
MICC-Maastricht ICT Competence Centre
Faculty of Humanities and Sciences, Maastricht University, Maastricht, The Netherlands

CONFERENCE VENUE

The Karl Dittrich zaal, Maastricht University, Bonnefantenplein 2, Maastricht, The Netherlands.

PROGRAMME CHAIR

Professor Myriam Diocaretz, MICC

PROGRAMME COMMITTEE

- Professor Jaap van den Herik, MICC
- Professor Mineke Bosch, Center for Gender and Diversity, Maastricht University
- Professor Maaike Meijer, Center for Gender and Diversity, Maastricht University
- Dr. David Levy, London, UK

REGISTRATION FEE

	Before June 1, 2008	After June 1, 2008
Non-Students	Euro 125	Euro 175
Ph.D. Students	Euro 75	Euro 100
Students	Euro 25	Euro 25

For more information please see www.unimaas.nl/humanrobot, or contact the organizing committee & secretariat: Joke Hellemons and Liesbeth Nederlands, email: humanrobot@micc.unimaas.nl.

Call for Papers

IFIP AI 2008

The Second IFIP International Conference on Artificial Intelligence in Theory and Practice

Milan, Italy
September 7-10, 2008

IFIP AI 2008 is one of the constituent parts of the IFIP World Computer Congress. The conference will follow the same format as the highly successful IFIP AI 2006 at the IFIP WCC 2006 in Santiago, Chile. For details, see http://www.wcc2008.org.

Papers describing original work are invited in the areas listed below or other areas of Artificial Intelligence for oral presentation at the conference. Acceptance will be based on quality, relevance and originality, and the practical value of the work.

Papers of no more than 10 pages should be submitted following the publisher's prescribed format (for details see the conference web site). Final versions may be submitted in either Word or Latex format but at this stage all papers should be submitted as PDF files. The proceedings will be published by Springer Science and Business Media (SSBM). Papers should be uploaded via the conference website at http://www.ifiptc12.org/ifipai2008 from which further information is available.

IMPORTANT DATES

- Submission deadline: January 7, 2008 (this will not be extended)
- Notification of acceptance: March 10, 2008
- Camera-ready deadline: April 7, 2008
- Conference: September 7-10, 2008

CONFERENCE CHAIR

John Debenham, University of Technology, Sydney, Australia; debenham@it.uts.edu.au.

PROGRAM COMMITTEE CHAIR

Max Bramer, University of Portsmouth, United Kingdom; max.bramer@port.ac.uk.

PROGRAM COMMITTEE MEMBERS

A full list of members is available on the conference website.

TOPICS (not exhaustive)

Industrial Applications of Artificial Intelligence; Intelligent Decision Support Systems; Integration of AI with other Technologies; Evaluation of AI Systems; AI Languages, Programming Techniques and Tools; Knowledge Acquisition; Expert and Knowledge-based Systems; Fuzzy Logic and Plausible Inference; Neural Networks; Evolutionary Computation and Algorithms; Speech and Natural Language Interfaces; Machine Vision; Intelligent Information Retrieval; Genetic Algorithms; Planning and Scheduling; Bayesian Networks and Stochastic Reasoning; Evolutionary Programming; Learning and Adaptive Systems; Intelligent Agents;

Distributed AI Algorithms, Techniques, and Applications; Distributed AI Systems and Architectures; Intelligent Tutoring Systems; Structured and Unstructured Data Mining; Case-Based Reasoning Systems; Hardware and Robotics; Social Impact, Acceptance and Implications of AI; Intelligent Systems Engineering and Design Methodologies; Ontologies and Semantic Web; Knowledge and Information Management; Business Process Management and Enterprise Portals; Organisational Memory Knowledge Systems; Inter-organisational KM portals; Knowledge Management, E-Learning and Enterprise Portals.

For more information, see http://www.ifiptc12.org/ifipai2008.

CONFERENCES, SYMPOSIA WORKSHOPS

MARCH 12-15, 2008
HRI 2008: The 2008 ACM/IEEE International Conference on Human Robot Interaction, Amsterdam, The Netherlands.
http://www.hri2008.org

APRIL 14-15, 2008
DIR 2008: 8th Dutch-Belgian Information Retrieval Workshop 2008, Maastricht, The Netherlands.
http://www.ltci.ugent.be/DIR2008

MAY 21-25, 2008
EUROBOT Conference 2008: International conference on research and education in robotics, Heidelberg, Germany.
http://www.eurobot-deutschland.de

MAY 22, 2008
The Web and Beyond, Amsterdam, The Netherlands.
http://www.thewebandbeyond.nl/2008/06/website/?page_id=22

MAY 22-23, 2008
EIS 2008: 3rd SIKS/BENAIS Conference on Enterprise Information Systems, Tilburg, The Netherlands.
www.benais.nl

JUNE 3-6, 2008
HPCS 2008: The 2008 International Conference on High Performance Computing & Simulation with a Special Session on Pattern Analysis and Recognition, (PAR'2008); and ECMS 2008: The

22nd European Conference on Modeling and Simulation, Nicosia, Cyprus.
http://cisedu.us/cis/hpcs/08
http://www.scs-europe.net/conf/ecms2008

JUNE 4-5, 2008
3rd CoreGRID Workshop on Grid Middleware. Barcelona, Spain.
http://www.coregrid.net/mambo/content/view/590/385

JUNE 10, 2008
JSAI2008: The 22nd Annual Conference of The Japanese Society for Artificial Intelligence; and JURISIN 2008: Second International Workshop on Juris-informatics, Asahikawa Convention Bureau, Hokkaido, Japan.
http://www.ntt.dis.titech.ac.jp/jurisin2008

JUNE 12-13, 2008
1st International Conference on Human-Robot Personal Relationships, Maastricht University, Maastricht, The Netherlands.
http://www.unimaas.nl/humanrobot

JUNE 17-20, 2008
ISC'08: International Supercomputing Conference, Dresden, Germany.
http://www.supercomp.de/isc08/content

JUNE 19-21, 2008
CIRAS 2008: The 5th International Conference on Computational Intelligence, Robotics and Autonomous Systems, Linz, Austria.
http://www.ciras2008.org

JUNE 30-JULY 3, 2008
ICCSA 2008: The 2008 International Conference on Computational Science and Applications, University of Perugia, Perugia, Italy.
http://www.iccsa.org

JULY 15-19, 2008
PETRA'08: The 1st International Conference on Pervasive Technologies Related to Assistive environments, Athens, Greece.
http://www.petrae.org

JULY 21-25, 2008
ECAI 2008: The 18th Biennial European Conference on Artificial Intelligence, Patras, Greece.
http://www.ece.upatras.gr/ecai2008

JULY 21-25, 2008
MobiQuitous 2008: The Fifth Annual International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services, Dublin, Ireland.
http://www.mobiquitous.org

AUGUST 13-15, 2008
GAME-ON: North America 2008, McGill University Montreal, Montreal, Canada.
http://www.eurosis.org/cms/?q=taxonomy/term/119

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 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

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 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 30-31, 2008
BNAIC 2008: The 20th Belgian-Dutch Conference on Artificial Intelligence. Bad Boekelo (near Enschede), The Netherlands.
Web site: to be announced.

DECEMBER 9-12, 2008
IAT-2008: IEEE/WIC/ACM International Conference on Intelligent Agent Technology, Sydney, Australia.
http://datamining.it.uts.edu.au/wi08/html/iat

DECEMBER 13-15, 2008
SH 2008: The Third International Symposium on Smart Home; and FGCN 2008: The Second International Conference on Future Generation Communication and Networking, Hainan Island, China.
http://www.sersc.org/SH08
http://www.sersc.org/FGCN2008

DECEMBER 17-20, 2008
EUC 2008: The 2008 IEEE/IFIP International Conference on Embedded and Ubiquitous Computing, Shanghai, China.
http://epcc.sjtu.edu.cn/euc2008

HOW TO SUBSCRIBE

The BNVKI/AIABN Newsletter is a direct benefit of membership of the BNVKI/AIABN. Membership dues are € 40,-- for regular members; € 25,-- for doctoral students (AIO's); and € 20,-- for students. In addition, members will receive access to the electronic version of the European journal *AI Communications*. The Newsletter appears bimonthly and contains information about conferences, research projects, job opportunities, funding opportunities, etc., provided enough information is supplied. Therefore, all members are encouraged to send news and items they consider worthwhile to the editorial office of the BNVKI/AIABN Newsletter. Subscription is done by payment of the membership due to Postbank no. 3102697 in The Netherlands (IBAN: NL 74 PSTB 0003 1026 97; BIC: PSTBNL21). Specify *BNVKI/AIABN* as the recipient, and please do not forget to mention your name and address. Sending of the BNVKI/AIABN Newsletter will only commence after your payment has been received. If you wish to conclude your membership, please send a written notification to the editorial office before December 1, 2008.

COPY

The editorial board welcomes product announcements, book reviews, product reviews, overviews of AI education, AI research in business, and interviews. Contributions stating controversial opinions or otherwise stimulating discussions are highly encouraged. Please send your submission by E-mail (MS Word or text) to newsletter@micc.unimaas.nl.

ADVERTISING

It is possible to have your advertisement included in the BNVKI/AIABN Newsletter. For further information about pricing etc., see elsewhere in the Newsletter or contact the editorial office.

CHANGE OF ADDRESS

The BNVKI/AIABN Newsletter is sent from Maastricht. The BNVKI/AIABN board has decided that the BNVKI/AIABN membership administration takes place at the editorial office of the Newsletter. Therefore, please send address changes to:

Editorial Office BNVKI/AIABN Newsletter
Liesbeth Nederlands,
MICC-IKAT, Universiteit Maastricht
P.O. Box 616, 6200 MD Maastricht, The Netherlands
E-mail: newsletter@micc.unimaas.nl
http://www.cs.unimaas.nl/~bnvki