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Benelux AI Newsletter

Would you like to announce your own events on the BNVKI website and newsletter? Send an email to events@bnvki.org! Also reports of past events are welcome. If you have other news or contributions for the BNVKI newsletter, these can be sent to editor@bnvki.org.

BNAIC 2019 in Brussels

The Benelux Artificial Intelligence Conference (BNAIC) is a yearly event. BNAIC includes invited speakers, research presentations, posters and demonstrations. Authors are invited to submit papers on all aspects of artificial intelligence. BNAIC 2019 will be held in Brussels on November 7-8 and will again be colocated with BENELEARN. More information will soon be available at <http://bnaic19.brussels> and <http://benelearn19.brussels>.

National AI course launched in the Netherlands

Artificial intelligence is present in many aspects of our daily lives. However, the general knowledge about it is limited. That is why there is now the 'Nationale AI-cursus' a free online course for all Dutch people, about the basic principles of AI.

The National AI Course is an initiative of AI for Good, ICAI and Elephant Road. The

program was co-created by Ahold Delhaize, Deloitte, ELaw Leiden, FME / UPgrade NL, Pon, Rabobank, Radboud University, TU Delft Design for Values, University of Helsinki, University of Amsterdam and Wolters Kluwer and made possible by Brainport Eindhoven, Capgemini, Cor Wit Fund, Think Productions, ECP, Intel, Level V, LEWIS, RMMBR, Rijks Academy for Digitalisation and Computerization Government (RADIO) of the Ministry of the Interior and Kingdom Relations, Samsung, Stichting GO Fonds, VNO-NCW SME The Netherlands, Vogin and Zadkine.

The course is based on a similar initiative in Finland, supplemented by contributions from top Dutch experts: Catholijn Jonker (TU Delft), Cees Snoek (University of Amsterdam), Evert Haasdijk (Deloitte), Jeroen van den Hoven (TU Delft), Maarten de Rijke (University of Amsterdam), Marlies van Eck (Leiden University), Max Welling (University of Amsterdam), Mireille Hildebrandt (Vrije Universiteit Brussel), Pim Haselager (Thunder Institute for Brain cognition and behavior), Rianne van den Berg (University of Amsterdam), Roel Schutgens (Radboud University Nijmegen), Tom Heskes (Radboud University Nijmegen) and Valerie Frissen (Leiden University).

Registration for the course is open on www.ai-cursus.nl.

Event report: Decision Intelligence Seminar

On February 5th 2019, a [*Decision Intelligence Seminar*](#) was held at KU Leuven Campus De Nayer in Sint-Katelijne-Waver. This multidisciplinary event was organised by a consortium of companies together with three different KU Leuven research groups: the LIRIS group of the Faculty of Economics and Business, the DTAI group of the Faculty of Engineering Science and the EAVISE group of the Faculty of Engineering Technology.

In the current age of Deep Learning, the seminar served as a powerful reminder of the potential of *knowledge-based systems*. It focused on several industrial use cases of state-of-the-art Knowledge Representation (KR) technology. Representatives from the company Saint-Gobain discussed the application of this technology to automated product design, Teal Partners discussed the use case of wage calculations and SCSi bvba talked about applications in the setting of a notary office. In addition, IAM4 talked about application in smart contracts, while financial applications were discussed by The Banking Scene.

The event focused specifically on KR methods to represent the *decision knowledge* that

underlies company's day-to-day operational decisions. Dorien Bauwens from Informatie Vlaanderen discussed the importance of a proper management of this decision knowledge in a governmental context, while Martin de Villiers addressed the same topic in the context of South-African health insurance.

To facilitate decision management, the OMG group has recently published the *Decision Model and Notation* standard, which allows formal models of decision knowledge to be constructed and maintained by domain experts, without requiring the help of knowledge engineers or IT staff. An introduction to DMN was given by Jan Vanthienen (KU Leuven, LIRIS), one of the co-authors of this standard. In several of the presentations, companies reported very positive experiences with this standard.

The emerging picture was one in which the DMN "front-end", coupled with powerful KR tools as "back-end", offers a way of reliably automating and analysing decision processes, which can provide a significant amount of added value to companies.

Especially the ability to explain and understand decisions was often cited as very important by the industrial speakers.

BNVKI & Industry Part 1: Industry@BNAIC/Benelearn

As BNVKI board member who is responsible for the relationship with the industry, I often wonder what this relationship is, but in particular what it could or should be. Especially in these times where AI is on top of all the hype curves and hardly a conference comes by that does not mention the term AI in its introduction. In this short series of interviews with people from the industry I hope to shed light on the current and possible future role of the BNVKI through the lens of industry.

Today in part 1: Four visitors of BNAIC/Benelearn 2018 on their motivation for visiting this main outlet of the BNVKI and their ideas on how the conference and BNVKI could become more valuable to them.

Networking and getting insight into the current state of the art are the two main reasons why the industry visits BNAIC/Benelearn.

Hans Onvlee from ASML embodies the first goal: in his responsibility of shaping a new AI research group he is looking for good contacts. Onvlee is particularly eager to

familiarize himself with the *Jheronimus Academy of Data Science (JADS)*, where 2018 BNAIC/Benelearn is hosted. Marten Schutten from Target Holding, which could be considered an established AI group, is interested in developments in the field, but also on the outlook for new acquaintances. Schutten is in particular looking for senior AI'ers, because "we know where to find juniors and they find us, but good experienced senior AI'ers are much more challenging to find and attract." Ramon van den Akker, de Volksbank, has as main purpose to gain knowledge and a good overview of the latest trends in machine learning (ML) so he knows which technologies are to be expected. Wan-Jui Lee from the Dutch Railways wants it all; she is looking for long-term, strong relationships with universities (e.g. through student projects) but also hopes to gain insight in new developments to fuel their strategic view on R&D and long-term research roadmap.

On day 1, already two of the four considered their visit to be successful.

Lee made a new connection for a student project and discovered specific researchers working on topics that are very relevant for her company, "So I now know who to contact!" Schutten got inspired and noted several developments down to further inspect. He also talked to new people, "who knows what will come from that." Onvlee will consider his visit successful if he goes home with concrete leads to follow up. Van den Akker praises the open, friendly atmosphere of the conference, but misses the state-of-the-art overviews on specific topics.

The industry would like the conference to cover topics more comprehensively.

The current setup of the conference is based on paper presentations. For people coming from industry this is not the easiest way to boost their knowledge level. Onvlee would like key-note speakers to discuss their topic at a higher level of abstraction, so that the audience gets a good overview of their field and its maturity level. With the same goal in mind Schutten proposes longer, more in-depth talks, so there is time to really learn about a particular topic, e.g. Explainable AI. Similarly, Van den Akker would welcome sessions that last half a day on dedicated topics, like Transfer Learning, Anomaly Detection, or AI and Ethics / GDPR. While Lee suggests the introduction of panel discussions to think about common problems, e.g. Scheduling, and discuss the best approach towards them.

Networking / match-making sessions would be applauded.

Van den Akker mentions that his proposed half-a-day sessions could also function as a means to get to know people with similar interests. Also Lee suggests to put people with similar interests in one room and to match researchers that are application-

oriented with companies that have relevant data, applications or research questions. One way of doing that could be the formulation of specific challenges by companies that researchers can subscribe to. Onvlee thinks that practical problems faced by industry, like data drift, could also provide interesting research directions for academia. The general sentiment was that such sessions should not be limited to the conference but could be organized as separate events.

What could the BNVKI do for you? (In a world without limits ;))

Van den Akker would like the BNKVI to give out a journal or organize a lecture series for AI MSc/PhDs working in industry. Goal would be to keep them up-to-date with developments in the field but in particular to provide a critical reflection, i.e. give attention to the downsides of the real-world application of new techniques or approaches. Onvlee is positive about the “round-tables” organized by JADS and thinks such initiatives could be supported and act as a platform to stimulate collaboration between academia and industry. Also Schutten would like the BNVKI to strengthen the industry-academia connection. He comments that current AI studies pay little attention to real-world applications and that students would benefit from a closer collaboration with industry to learn about the relationship between what they get taught and its impact in the real world. Lee concurs that many students and researchers do not know how complex real-world problems are. She suggests BNVKI could organize company visits to help create relationships. And last, she would welcome a simple means to spread an internship position to all students of AI.

I like to thank the four interviewees. Although from different industries in size and domain, certain commonalities in their answers stand out. I will take these with me and investigate whether they can be applied in the organization of BNAIC / Benelearn 2019.

ALIFE Workshop on Evolution of Human Behaviour

This workshop will explore how research on the evolution of human behaviour can be moved beyond the theoretical realm to address societal challenges. It is part of the ALIFE conference hosted in Newcastle (29th July – 2nd August).

The workshop will be organised in two parts. The first 1.5 hours will focus on the state-

of-the-art theoretical and modelling work. The second 1.5 hours will discuss how this knowledge on the evolution of human behaviour can contribute to (i) improve human societies, (ii) design artificial societies, and (iii) develop the interface between them. The workshop will emphasize the role of new technology which can either conflict with previous behavioural adaptations or shape our cultural evolution. It includes topics such as:

- From the evolution of morality to ethical artificial intelligence
- From the evolution of social behaviour to sustainable socio-technical systems
- From the evolution of social learning to trustworthy media
- From the evolution of institutions to democratic societies

The committee now welcome submissions for contributed talks (10 min + 5 min question) on either the theoretical or the practical part of the workshop.

Submissions are extended abstracts (<500 words>ehbalife@gmail.com. The deadline for submission is Friday 14th June.

More information can be found on the website: <https://ehbalife.github.io>

BNAIC 2018: Conference report

BNAIC is the annual Benelux Conference on Artificial Intelligence. In 2018, the 30th edition of BNAIC was organized by the Jheronimus Academy of Data Science (JADS), under the auspices of the Benelux Association for Artificial Intelligence (BNVKI) and the Dutch Research School for Information and Knowledge Systems (SIKS). BNAIC 2018 took place in Marienburg, 's-Hertogenbosch, Netherlands, on Thursday November 8 and Friday November 9, 2018. BNAIC 2018 included invited speakers, research presentations, posters, demonstrations, a special track on explainable AI, as well as a special industry track, also containing contributed/invited presentations.

The five BNAIC 2018 keynote speakers were:

- Hinrich Schuetze, LMU Munich: Multilinguality: Boon or Bane for Representation Learning?
- Rushed Kanawati, Universite Paris 13: Community Detection in Multiplex Networks: Algorithms and Applications
- Gemma Boleda, Pompeu Fabra University: At the crossroad between discrete and continuous aspects of language
- Eyke Huellermeier, Paderborn University: Towards On-the-Fly Machine Learning

- Lukas Vermeer, [Booking.com](https://www.booking.com): Data Science vs. Data Alchemy

Also, three FACt talks (FACulty focusing on the FACts of Artificial Intelligence) were given:

- Bert Kappen: Deep learning: it is time for something different
- Ann Nowe: Towards explainable reinforcement learning
- Koen Hindriks: Integrating System 1 and 2

For the regular BNAIC sessions, authors were invited to submit papers on all aspects of Artificial Intelligence. This year we have received 56 submissions in total. Of the 26 submitted Type A regular papers, 12 (46%) were accepted for oral presentation, and 9 (35%) for poster presentation. 5 (19%) were rejected. Of the 17 submitted Type B compressed contributions, 15 (88%) were accepted for oral presentation, and 2 (12%) for poster presentation. None were rejected. All 13 submitted Type C demonstration abstracts and Type D thesis abstracts were accepted, where 11 (85%) were accepted for oral presentation, and 2 (15%) for poster presentation. The selection was made using peer review. Each submission was assigned to at least three members of the program committee, and their expert reviews were the basis for the final decisions. All submissions accepted for oral or poster presentations and all demonstration abstracts appeared in the electronic preproceedings, made available on the conference web site during the conference (<https://bnaic2018.nl/>). A selection of the Type A regular papers accepted for oral presentation will appear in the postproceedings, to be published in the Springer CCIS series.

The BNAIC 2018 conference would not have been possible without the support and efforts of many. We thank the members of the program committee for their constructive and scholarly reviews. We are grateful to Arjan van den Born, Chris Emmery, Arjan Haring, and Laura Niemeijer for their reliable administrative support and local organization/coordination at JADS. We also wish to thank all student volunteers for enthusiastically helping out in many ways. A special thanks goes to Eric Postma for his invaluable support for BNAIC 2018 at JADS in many ways “behind the scenes”.

We are grateful to our sponsors for their generous support of the conference:

- Target Holding
 - DIKW
 - SNN Adaptive Intelligence
 - SIKS
 - BNVKI
 - Stichting Knowledge-Based Systems (SKBS)
-

UAntwerp vacancy: professor in the area of Machine Learning for Distributed Environments

The IDLab research group of the University of Antwerp currently has a vacancy for a full-time professor in the area of Machine Learning for Distributed Environments. More information on this position can be found at:

<https://www.uantwerpen.be/en/jobs/vacancies/ap/2019zapfwetex067/>

The deadline for application is April 21st, 2019.

AI 4 Belgium Coalition proposes AI strategy

"With Artificial Intelligence, we can improve our lives"

***AI 4 Belgium Coalition* proposes AI strategy at the request of Alexander De Croo and Philippe De Backer**

Artificial intelligence (AI) can not only improve our lives, it can also help us find solutions to complex problems such as health care or environmental protection. Almost three-quarters of Belgians, however, still know little about AI and its benefits. In addition, many Belgians rightly ask themselves many questions about the impact of AI on their privacy and their job. To make AI a Belgian success story, Deputy Prime Minister Alexander De Croo and Minister of Digital Agenda Philippe De Backer asked a group of experts, now the *AI 4 Belgium Coalition*, for an AI plan, focusing on the right skills, ethical data use, awareness, innovation and better public service.

A new survey of IPSOS and the FPS Economy shows that 3 out of 4 Belgians are positive about new technologies. On the other hand, there is a lack of knowledge about

artificial intelligence. 7 in 10 Belgians have already heard of AI, but what the term actually means remains a question mark for almost half of Belgians. It is striking that 70% of Belgians believe that AI can lead to an increase in quality of life. Yet many Belgians are also concerned about the impact of artificial intelligence on privacy, work and inequality.

More details of the survey attached.

To prepare Belgium for artificial intelligence, De Croo and De Backer grouped around forty experts from the academic and business world, startups and government.

Some notable names are Pattie Maes, who leads the 'Media Lab' at MIT; Luc Van Gool, specialist in image recognition at ETH Zurich and KULeuven; Marc Raisière, CEO of Belfius; Hans D'hondt, chairman of FPS finance and Pieter De Leenheer, CTO of Collibra who just raised 100 million dollars. The result is the AI 4 Belgium strategy (a true grass-roots plan that the AI community has built together.)

With the strategy, the experts primarily want to remove the existing uncertainty and concern of citizens and businesses. Information and skills are therefore essential to ensure that everyone reaps the benefits of this opportunity. By highlighting precursors and examples, the ministers hope that Belgian organizations inspire each other. They also want to put Belgium on the international map as an AI la. The ambition of the AI 4 Belgium Coalition is to make AI a priority of this and the next government.

Deputy Prime Minister Alexander De Croo: "Unknown is unloved. But due to a lack of knowledge about AI, Belgium may miss out on a lot of prosperity. Agoria estimates that digitization and AI can create 860,000 jobs by 2030. Instead of lagging behind, we want to pick up speed with the right knowledge and skills. "

Philippe De Backer, Minister of Digital Agenda: "I believe that AI can become the job engine of the future for our country. With the rise of 5G, IOT, robotics and artificial intelligence, we are experiencing the fourth industrial revolution. It is more about brains and creativity than about muscle power and sweat. Teaching young people the right skills is essential in an innovative digital knowledge economy. That is why we need to focus more on coding, algorithmic thinking and science and technology in our education. In this way, we prepare for the future. "

With this plan, both ministers want to put AI on the agenda of the next government.

Summary of recommendations of the AI 4 Belgium Coalition:

We have world-class assets that need to be nurtured and developed. And with the right level of ambition and thoughtful implementation, we can change our society for the better. We structure our recommendations in five chapters. We start with skills, putting people first, and with a responsible way of sharing data. Technology should be at our service, not the other way around. The next three chapters focus on technology adoption, innovation and better public service. In conclusion, we set out a few implementation principles, such as the need for overall ambition.

Set up a new learning deal – Technology and AI are transforming society and our job market. We currently lack both the capacity and tools to support this transition and our schools are not preparing the next generations for the 21st century. This is the reason why we propose a new learning deal; a universal skills building program for adults and more digital - as well as human - skills for our youth.

Develop a responsible data strategy – Trust is the cornerstone of any transformation. We believe in the need for a robust and up-to-date legal framework, ethical principles and more transparency. Moreover, data is the energy that will fuel the fourth industrial revolution. But data often remains inaccessible. We need to build a data ecosystem that facilitates more responsible data-sharing with reinforced open data policies, more collaborations and a platform with well-structured tools and approaches.

Support private sector AI adoption – It can be hard for companies, particularly SMEs, to start working with AI. It can be perceived as complex; companies might lack the internal resources and the iterative approach can be too costly. Hence, we propose to demystify AI through a lighthouse approach (training programs, large-scale events and social-impact projects). Secondly, we believe in more collaboration and accessibility to AI through a national AI hub. Lastly, we need to facilitate experimentation.

Innovate and radiate – We have world-class researchers, but our research is not at scale. Also, we have yet to develop, attract and retain enough AI talent. Lastly, it is hard for innovative start-up companies to grow beyond the early stages. Hence, we propose to position Belgium as Europe's AI lab through sandboxes and large-scale collaboration within academia, leveraging Belgian transposition of the GDPR. Next, we recommend creating more AI-related training programs, more focus on practical applications and more selective migration. Lastly, we suggest supporting the growth of our AI companies through an investment fund and by differentiating our expertise.

Improve public service and boost the ecosystem – Too few public organisations are

currently experimenting with AI. Firstly, we propose that public institutions rethink their own roles and evolve towards a platform approach. Secondly, we need to give public institutions the tools to experiment; such as a rolling fund and more innovation-friendly procurement. Lastly, we recommend creating a Chief Digital Officer role to organise internal transformations and launch large-scale transversal projects.

A few principles to ensure a sustainable implementation: ensuring continued trust from the public, a European approach, collaboration between all stakeholders, a grass-roots/community-led approach, focus on specific areas (such as healthcare/life sciences) and, lastly, daring to be **ambitious and audacious. This will require an investment of at least EUR 1 billion by 2030.**

Call for Nominations: EurAI Artificial Intelligence Dissertation Award 2018

Nominations are invited for the 2018 Artificial Intelligence Dissertation Award sponsored by EurAI, the European Association of Artificial Intelligence.

Please take a moment to nominate your students, or to recommend to your colleagues to nominate their students.

This Award includes a certificate signed by the EurAI President and 1500 Euros (which includes the travel grant for the Award ceremony).

Nominations are due by May 13, 2019 by submitting a single PDF file as described below listing both the NOMINATED candidate and the NOMINATOR as the AUTHORS through EasyChair:

<https://easychair.org/conferences/?conf=euraiphdaward2018>

Eligible doctoral dissertations are those defended after December 1, 2017 in the general area of Artificial Intelligence. The dissertation must have been

defended at a European university and the author must be a personal member of a EurAI member society. In case a thesis is nominated for another

national or international award before or during its review for the EurAI dissertation

award, the author is requested to inform the EurAI dissertation award committee about this fact.

To be considered, a dissertation must be nominated by the thesis supervisor, who must submit the following items as a SINGLE PDF file in the order:

- Nomination cover-page that includes: the name, affiliation, and contact details of the nominator; the date of the defense of the dissertation;

and the names of the jury/examiners involved in its defense;

- nomination letters, either digitally signed or scanned original, from two referees supporting the submission and stating their assessment of why the thesis should win the award.

- if the thesis was not written in English the nomination must include an English paper describing the core ideas of the thesis that has been submitted for publication in an international journal or a prestigious conference.

- the full nominated dissertation.

The selection will be based on the originality, impact, and written quality of the work. Work that has been submitted to and/or accepted at workshops, conferences,

or journals will be considered more favourably. Work that is primarily attributed to the student's own initiative will also be considered more favourably. Finally, the quality of the written document will be considered.

Please address any queries to Michela Milano – michela.milano@unibo.it

The outcome will be announced by the mid-June.

The Award will be presented during IJCAI2019.

Summer School on AI & Law

From 8-10 July the first Summer school on AI & law will be held at the renowned European University Institute in Fiesole, Florence, Italy. The application deadline is 22

April. For more information see: <https://aiandlawsummerschool.org>

Event sponsorship: updated amount

BNVKI sponsors AI-related events in the Benelux. At the previous BNAIC conference, it was decided to raise the sponsorship amount from €250 to €500. All the practical information can be found on the [relevant page of the BNVKI website](#).

New journal: Nature Machine Intelligence

Following the increasing world-wide interest in AI and Machine Learning, the prestigious journal Nature has launched a new online journal [Nature Machine Intelligence](#). The inaugural number, [volume 1, issue 1, January 2019](#), is now available.

Flemish AI initiatives

In recent months, the department for Economy, Science and Innovation of the Flemish government has taken a number of initiatives concerning AI.

In July, they organised a [Stakeholders' day on Artificiële Intelligence](#) to bring together practitioners, researchers and other interested parties, in an effort to map the Flemish AI landscape and identify key concerns going forward. From the BNVKI board, Joost Vennekens participated in this event. The report and presentations [can be downloaded online](#).

More recently, a [30 M€ action plan](#) was announced by Flemish government minister Muyters. Based on [advice from VARIO](#), this plan represent one of the largest investments in AI in the region. By focusing on specific key technologies, the plan aims to ensure that AI technology in Flanders remains competitive on a global scale.

Awards at BNAIC 2018

Several awards were handed out at BNAIC 2018:

SNN Best Paper Award:

Hui Wang, Michael Emmerich, Aske Plaat

Assessing the Potential of Classical Q-learning in General Game Playing



SKBS Best Demo Award:

Laura van der Lubbe, Charlotte Gerritsen, Daniel Formolo, Marco Otte, Tibor Bosse

An Application for Training Verbal Resilience to Doorstep Scams using Virtual Agents



BNVKI Best Thesis Abstract Award:

Axel Abels, Diederik M. Roijers, Tom Lenaerts

Dynamic Weights in Multi Objective Deep Reinforcement Learning



The BNVKI board would like to congratulate all winners!

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