PPSN 2020

September 5 - 9 Leiden, The Netherlands

liacs Leiden Institute of Advanced Computer Science

Universiteit Leiden The Netherlands

2020 | PARALLEL PROBLEM SOLVING from NATURE


NONNENBRUG

Welcome & General Information

Welcome to the Sixteenth International Conference on Parallel Problem Solving from Nature (PPSN XVI), held in Leiden, The Netherlands on September 5-9, 2020.

Leiden University and the Leiden Institute of Advanced Computer Science (LIACS) are proud to host the 30th anniversary of PPSN and to run it, for the first time, as a hybrid Conference.

PPSN was originally designed to bring together researchers and practitioners in the field of Natural Computing, the study of computing approaches which are gleaned from natural models. Today, the conference series has evolved and welcomes works on all types of iterative optimization heuristics. Notably, we also welcome and include now contributions on connections between search heuristics and machine learning or other artificial intelligence approaches.

PPSN XVI features workshops and tutorials covering advanced and fundamental topics in the field of Natural Computing, as well as algorithm competitions. The keynote talks are given by three world-renowned researchers, Carme Torras, Eric Postma, and Christian Stöcker.

Following PPSN's unique tradition, all accepted papers are presented during poster sessions and are included in the proceedings. The proceedings are published in the Lecture Notes in Computer Science series by Springer (LNCS 12269 & 12270).

About the hybrid event:
To enter the on-line part of the conference, please use the Whova app or website. You have received a unique code to enter the on-line venue. As soon as you login on your computer you are shown a demonstration video showing you where to go and how to check out the agenda. There is also a button to enter the live room on the conference days where you can ask questions about the on-line venue or any other questions you have.

The agenda is always shown in your current time zone. From the agenda you can enter the different rooms with presentations, but you can also enter the network room to chat with other attendees on-line and on-site.

This event is also available on the Whova Mobile App: Download Link. You can check the agenda, enter live rooms or check the app for the floor maps or to connect with other attendees on-site and on-line.

We hope you have a great conference experience, whether you attend on-line or on-site. If there is anything we can do to help, please let us know. We are very much looking forward to welcoming you at the conference, on-line and on-site!

The PPSN team

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Honorary Chairs

Hans-Paul Schwefel

Hans-Paul Schwefel studied Aero- and Space-Technology at the Technical University of Berlin (TUB). Before and after receiving his engineer diploma in 1965 he worked at the Hermann-Föttinger-Institute of Hydrodynamics, from 1967 to 1970 at an industrial research institute, and from 1971 to 1975 again at the TUB, from where he got his Dr.-Ing. degree in 1975. Coherent during that period at Berlin was the development of a new experimental and later on also numerical optimization method called 'Evolutionsstrategie'. From 1976 to 1985 he acted as senior research fellow at the Research Centre (KFA) Jülich, where he was head of a computer aided planning tools group. Since 1985 until he was pensioned in 2006 he was holder of a Chair for Systems Analysis (now Algorithm Engineering) at the (now Technical) University of Dortmund, Department of (now Faculty for) Computer Science.

In 1990 he was co-founder of the international conference series on Parallel Problem Solving from Nature (PPSN), which has been held biennially ever since. He acted as dean of the faculty, as spokesman of the collaborative research center on computational intelligence (SFB 531), as co-founder and president of the Informatics Centre Dortmund (ICD), and also as pro-rector for research at the university. He has been member of the editorial boards of three journals and advisory board member of two book series in the field of Evolutionary respective Natural Computation. His publication list comprises more than 160 entries.

In 2002 he got an Evolutionary Computation Pioneer Award from the IEEE Neural Networks Society, later renamed IEEE Computational Intelligence Society. As Senior Member since 2005, he was elevated to Fellow of the IEEE in 2007. In the same year The University of Birmingham admitted him to the degree of Doctor of Science, honoris causa. An IEEE Frank Rosenblatt Award was awarded to Hans-Paul Schwefel in the year 2011.

Grzegorz Rozenberg

Prof. Grzegorz Rozenberg was born in Poland, where he obtained his Master's degree in Computer Science and Electronics and his Ph.D. degree in Mathematics. He is working at Leiden University since 1979. After his retirement in 2007, he has proceeded with his research. Rozenberg has published about 600 papers, 6 books and he (co-)edited over 100 books. He supervised numerous Ph.D. students, many of whom have become known scientists.

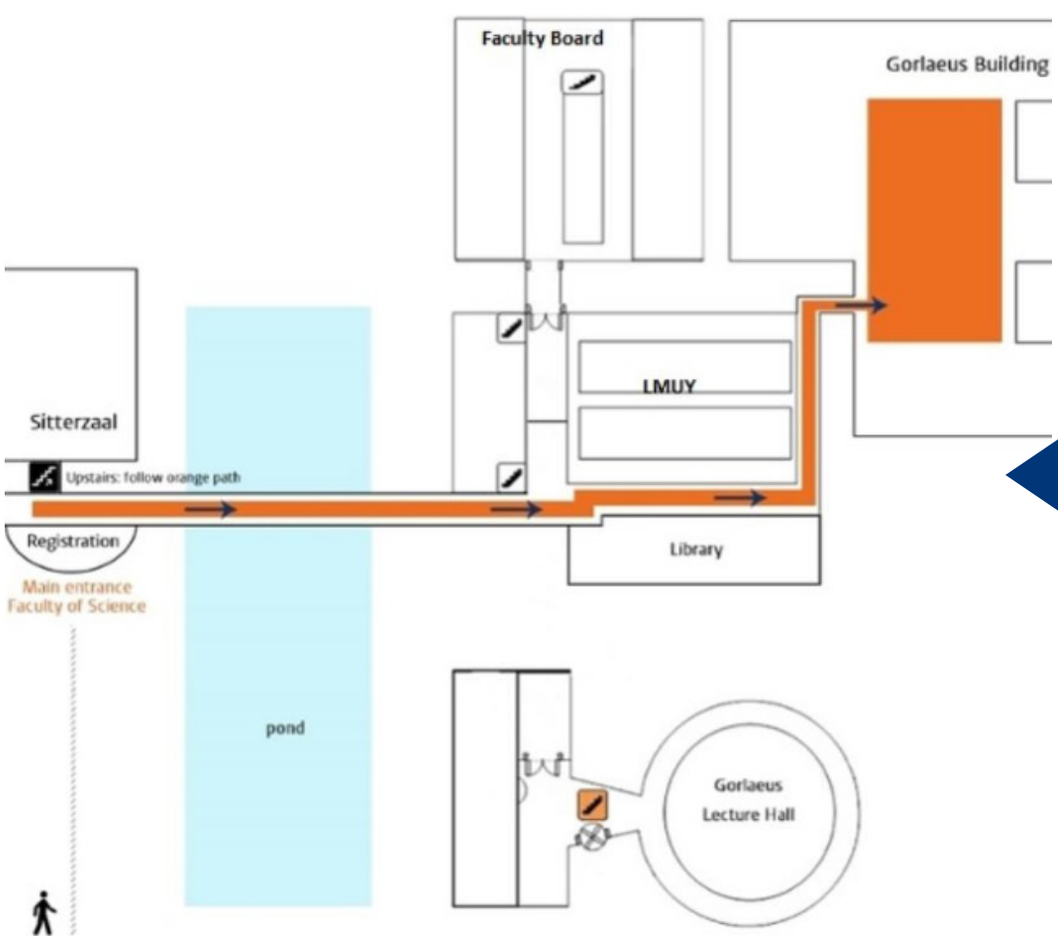
Already in the 1970s, Rozenberg started promoting natural computing as a coherent scientific discipline. He gave this area its name and defined its scope. He played a central role in the development of theoretical computer science in Europe. His research is very broad in scope and it is a prime example of interdisciplinary research.

His remarkable achievements have been recognised by the scientific community, as demonstrated by the fact that Rozenberg has received six Honorary Doctorates from all over Europe: the University of Turku (Finland), the Technical University of Berlin (Germany), the University of Bologna (Italy), the Swedish Åbo Akademi University in Turku (Finland), the Warsaw University of Technology (Poland) an the University of Bucharest (Romania). In 2017 he was knighted in the Order of the Netherlands Lion.

On-site Venue

Gorlaeus building

Tutorials, workshops and competitions will take place on September 5 and 6 in the Faculty of Science of Leiden University. The so called Gorlaeus building is the venue for on-site participants. On-line participants can join the tutorials, workshops and competitions via Whova. If you enter the Huygens building (Niels Bohrweg 2 2333 CA Leiden) you go to the first floor and follow the grey floor as shown in the map below. The rooms in the Atrium is where we have our workshops, tutorials and the coffee corner for a nice cup of coffee or tea.



The Gorlaeus Atrium can be found by entering the Huygens building (Niels Bohrweg 2, 2333 CA Leiden). Take the stairs to the first floor and follow the grey floor as shown in the map on the left. Go through the automatic doors on your left side and take a right turn immediately. Walk to the end of the corridor and take a left turn. Follow the corridor and you will walk right into the Gorlaeus Atrium.

CORPUS Congress Centre

From 7 to 9 September the conference takes place at CORPUS Congress Centre (Willem van Einthovenstraat 1, 2343 BH Leiden). All on-site poster presentations will take place here. There will be rooms available to attend the on-line poster presentations as well, via Whova.

When you enter the building, follow the signs to get to the conference centre.

Travel information

CORPUS Congress Centre and the Gorleaus building are a 5 minute walk apart. Both are close to the Hilton Garden Inn hotel. If you arrive at Leiden Central Station you can walk to the conference venue in a 30 minute walk.

From Central Station buses are available to take to CORPUS Congress Centre or the Gorlaeus building. To get to CORPUS Congress Centre or the Gorlaeus building take bus 237 to Katwijk, bus 37 to Katwijk or bus 57 to Nieuw-Vennep and get off the bus at the bus stop 'Wassenaarseweg'. Other possibilities are bus 30, 38 or 31 and get of at stop Leiden, Bio Science Park-Oost, or bus 221 to Noordwijk and get of at stop Leiden, Universiteitsterrein.

Tickets can be purchased via the bus driver. Please note that it is not possible to pay in cash in the bus, only with pin or creditcard. Due to the coronavirus masks are mandatory to travel with public transport.

Parking information

If you are travelling by car, there are several options available to park close to the venue. On Saturday 5 and Sunday 6 September, parking is possible for free at the Erhenfestweg parking, just accross the Gorlaeus Building, or at the University Sport Center parking (Einsteinweg 6, 2333 CC Leiden). On September 7 - 9 parking is possible at Corpus Congress Center for free.

On-line Venue

Whova

To enter the on-line environment of the conference you will need to use your unique link, which you received by email. As soon as you login to the platform a video will guide you through the system and will show you where to find what information.

In the main navigation panel it is possible to view the agenda of all the conference days. Clicking on an agenda item will reveal information about the content of the agenda item. This can either be a poster presentation, keynote, workshop, tutorial or competition. Abstracts and the link to the on-line rooms are available there as well.

You will find in the navigation panel many more tabs with information, such as floor plans of the on-site venue and a community tab to connect with other conference attendees. Navigate through it and you will be able to have a full on-line conference experience.

Whova App

The Whova event app is free for event attendees. To download the app, open the Apple Store or Google Play on your mobile device and search for 'Whova'. Once found, tap to download and install the Whova app.

Signing in is possible with the email address you used for event registration. Create a password and type your name. You can edit your profile: other attendees will be able to see your profile and network with you. You can also edit this later: click on your profile picture in the top-left corner.

The app will take your to the conference automatically. If this does not show up automatically, you can search for it (*Sixteenth International Conference on Parallel Problem Solving from Nature (PPSN XVI)*). Then, click the "join" button on the bottom of the event description page, and enter the event invitation code you received.

Conference Program

Saturday Sep. 5	Sunday Sep. 6	Monday Sep. 7	Tuesday Sep. 8	Wednesday Sep. 9
	Registration and Arrival Desk open 08:00-09:00	Registration and Arrival Desk open 08:00-09:00	Registration and Arrival Desk open 08:00-09:00	
	Tutorial 4 09:00-10:30 / Workshop 4 09:00-10:30	Opening 09:00	Annoucements 09:00	Annoucements 09:00
		Poster intro 09:15	Poster intro 09:15	Poster intro 09:15
Registration and Arrival Desk open 09:30-10:30		Poster Session 1, part 1 09:30-10:30	Poster Session 3, part 1 09:30-10:30	Poster Session 5, part 1 09:30-10:30
Coffee Break 10:30-11:00 / Tutorial 1 11:00-12:30 / Workshop 1 11:00-12:30	Coffee Break 10:30-11:00 / Tutorial 5 11:00-12:30 / Workshop 5 11:00-12:30	Coffee Break 10:30-11:00	Coffee Break 10:30-11:00	Coffee Break 10:30-11:00
		Poster Session 1, part 2 11:00-12:00	Poster Session 3, part 2 11:00-12:00	Poster Session 5, part 2 11:00-12:00
		Lunch 12:00-13:00	Lunch 12:00-13:00	Lunch 12:00-13:00
Lunch 12:30-13:30	Lunch 12:30-13:30	Keynote Eric Postma 13:00 - 14:00	Keynote Carme Torres 13:00 - 14:00	Keynote Christian Stöcker 13:00 - 14:00
Tutorial 2 13:30-15:00 / Workshop 2 13:30-15:00	Tutorial 6 13:30-15:00 / Workshop 6 13:30-15:00	Coffee Break 14:00-14:30	Coffee Break 14:00-14:30	Awards ceremony, competition results, closing 14:00-15:00
		Poster intro 14:30	Poster intro 14:30	
Coffee Break 15:00-15:30	Coffee Break 15:00-15:30	Poster Session 2, part 1 14:45-15:45	Poster Session 4, part 1 14:45-15:45	
Competitions 15:30-16:00	Organized transfer to the Social Event 15:30-16:00	Poster Session 2, part 2 15:45-16:45	Poster Session 4, part 2 15:45-16:45	
Tutorial 3 16:00-17:30 / Workshop 3 16:00-17:30	Social Event 16:00-18:00	Self-transfer to the city 16:45-17:30	Discussion forum 16:45-17:45	
		Guided tour of Leiden 17:30-19:00	Organized transfer to Katwijk 17:45-18:30	
			Beach dinner 18:30-22:30	

More information about the Program in the Whova app:

Tutorial, Workshop & Competition Program

TUTORIALS

Tutorial 1 September 5, 11:00-12:30

- **Evolutionary Algorithms and Hyper-Heuristics**
  Nelishia Pillay - on-line
- **Genetic improvement: improving real-world source code with search**
  Sandy Brownlee, Saemundur Haraldsson, John Woodward - on-line

Tutorial 2: September 5. 13:30-15:00

- **Exploratory Landscape Analysis**
  Pascal Kerschke and Mike Preuss - on-site
- **Constraint Handling in Evolutionary Multiobjective Optimization**
  Bogdan Filipic - on-line

Tutorial 3: September 5, 16:00-17:30

- **Runtime Analysis of Population-based Evolutionary Algorithms**
  Per Kristian Lehre - on-site
- **Gray Box Optimization for Evolutionary Computation**
  Darrell Whitley - on-line

Tutorial 4: September 6, 09:00-10:30

- **Pareto Optimization for Subset Selection: Theories and Practical Algorithms**
  Chao Qian and Yang Yu - on-line
- **Dynamic Control Parameter Choices in Evolutionary Computation**
  Gregor Papa - on-line
- **Evolutionary Diversity Optimization**
  Jakob Bossek, Aneta Neumann and Frank Neumann - mixed (some presenter(s) are on-site)

Tutorial 5: September 6, 11:00- 12:30

- **Next Generation Statistics for Meta-heuristic Stochastic Optimization Algorithms**
  Tome Eftimov and Peter Korošec - on-line
- **Recent advanced in SOMA algorithm**
  Roman Senkerik - on-site
- **Evolutionary Multi-Objective Optimisation Based on Decomposition: Developments and Opportunities**
  Ke Li - on-line

Tutorial 6: September 6, 13:30-15:00

- **Fitness Landscape Analysis: Understanding and Predicting Algorithm Performance for Single- and Multi-objective Optimization**
  Bilel Derbel, Arnaud Liefooghe, Sébastien Verel - mixed (some presenter(s) are on-site)
- **Automated Algorithm Configuration: Challenges, Methods and Perspectives**
  Marius Lindauer and André Biedenkapp - on-line

WORKSHOPS

Workshop 1: September 5, 11:00-12:30

- **Evolutionary and Bio-inspired techniques for Social Network Analysis (BioSocNets)**
  David Camacho - on-line

Workshop 2: September 5, 13:30-15:00

- **Stochastic Local Search Workshop (SLS)**
  Holger Hoos, Laetitia Jourdan, Marie-Eléonore Kessaci, Thomas Stützle, Nadarajen Veerapen - mixed (some presenter(s) are on-site)

Workshop 3: September 5, 16:00-17:30

- **Good Benchmarking Practices for Evolutionary Computation (BENCHMARK)**
  Carola Doerr, Tome Eftimov, Pascal Kerschke, Pietro S. Oliveto, Mike Preuss, and others - mixed (some presenter(s) are on-site)

Workshop 4: September 6, 09:00-10:30

- **Understanding Machine Learning Optimization Problems (UMLOP)**
  Marcus Gallagher, Mike Preuss, Pascal Kerschke, Olivier Teytaud - mixed (some presenter(s) are on-site)

Workshop 5: September 6, 11:00-12:30

- **(Multimodal) Multi-Objective Optimization: Challenges, Characteristics, and Peculiarities, part 1**
  Christian Grimme, Pascal Kerschke, Heike Trautmann, Hao Wang, Michael T.M. Emmerich - mixed (some presenter(s) are on-site)

Workshop 6: September 6, 13:30-15:00

- **(Multimodal) Multi-Objective Optimization: Challenges, Characteristics, and Peculiarities, part 2**
  Christian Grimme, Pascal Kerschke, Heike Trautmann, Hao Wang, Michael T.M. Emmerich - mixed (some presenter(s) are on-site)

COMPETITIONS

Competition 1: September 5, 15:30-15:40

- **General Video Game AI: Single Player Learning Competition**
  Hao Tong, Yan Tao, Jialin Liu - on-line

Competition 2: September 5, 15:40-15:50

- **Open Optimization Competition 2020**
  Carola Doerr, Olivier Teytaud, Jérémy Rapin, Thomas Bäck - on-site

Competition 3: September 5, 15:50-16:00

- **Game Benchmark Competition**
  Tea Tušar, Boris Naujoks, Vanessa Volz - on-site

Keynote Lectures

Eric Postma

RESEARCH PROFESSOR
Tilburg University & Jheronimus Academy of Data Science
September 7, 13:00-14:00

Parallel Problem Solving in Deep Learning

Artificial neural networks are coarse abstractions of their natural counterparts. The recent deep learning networks at the heart of the AI hype have been shown to be highly effective on "narrow" tasks, i.e., tasks that do not require broad contextual knowledge. Supervised deep learning realises a mapping from inputs onto desired outputs by means of a deep cascade of parameterised nonlinear functions. One of the breakthrough tasks involved the mapping of natural images on appropriate labels describing their main contents. The key difference between deep learning and traditional machine learning models is the number of free parameters used. Whereas traditional machine learning algorithms adhere to Occam's principle of keeping the number of free parameters as small as possible to avoid overfitting, typical deep learning networks violate this principle by including millions of free parameters. The presentation discusses how this over-parameterisation contributes to solving narrow tasks. The far-reaching implications for interpreting biological and artificial vision systems are explained in terms of the fitness and loss functions involved.

Biography

Eric Postma is professor in Artificial Intelligence at the Cognitive Science & AI department at Tilburg University and at the Jheronimus Academy of Data Science in 's-Hertogenbosch, a joint initiative of Eindhoven University of Technology and Tilburg University.

His Ph.D. in 1994 at Maastricht University concerned a biologically inspired model of covert attention. This served as an inspiration for his current research, which focusses on the use of data science (machine learning) in image recognition and cognitive modelling. Next to the development of models and theoretical frameworks, he always has and had an open eye for applied research. For instance, starting in the mid 1990s, he focused on the development of visual recognition and classification techniques for the cultural heritage. Subsequently, he launched the development of digital analysis methods for paintings. As a direct consequence, he was the leader of several scientific NWO projects in the programme ToKeN ("Toegankelijkheid en Kennisontsluiting in Nederland") and CATCH (Continuous Access to Cultural Heritage). Moreover, together with prof. C. Richard Johnson Jr., he initiated an international consortium for digital painting analysis. The work by his research group has been covered extensively in the media since 2000. In 2008 Postma and his team ranked second in the annual "Academische Jaarprijs" with a presentation on the breakthroughs of digital painting analysis. Together with Laurens van der Maaten, he received the AAAI-08 Most Innovative Video Award for a scientific video of the digital painting analysis. Currently, Postma is coordinating the REVIGO project and he is member of SIGAI, IPN, and the Lorenz center Computational Science Board.

Carme Torras

RESEARCH PROFESSOR
Institut de Robòtica i Informàtica Industrial (CSIC-UPC)
September 8, 13:00-14:00

Assistive Robotics: AI Challenges and Ethics Education Initiatives

Robotics research has evolved a lot in the last 20 years, and the focus has shifted from the mechanics, kinematics and control of industrial manipulators to the capacities of perception, learning and interaction with people of so-called social robots. This poses a series of research challenges. The way to instruct these robots must be easy and intuitive so that non-expert users can teach them the tasks they have to do, for example, through demonstrations. Not being caged like their predecessors in factories, they must be intrinsically safe to people, a critical aspect of considerable technical difficulty, especially when the interaction requires physical contact. They should be able to perceive and manipulate the deformable objects that abound in domestic and healthcare environments, which involves great complexity given the infinite dimensionality of their shape spaces compared to the six degrees of freedom that characterize the pose of a rigid object. They must also be tolerant to noisy perceptions and inaccurate actions and be endowed with a strong learning ability and adaptability to dynamic environments. Finally, the behaviour of these robots should not be limited to a fixed sequence of actions, but must be goal-driven and collaborative with people.

These six challenges can be pairwise grouped and translated into three U-turns of research in Artificial Intelligence. 1) Usability turn: from exhaustive programming taking into account all situations and rigid control schemes, to learning from demonstrations and compliant control. 2) Uncertainty turn: from high-resolution perception and accurate manipulation planning to task-oriented perception and probabilistic re-planning adapted to context and user. 3) Understanding turn: from building associations to attaching semantics to perceptions of objects and situations as well as reasoning about functionalities and goals.

In the keynote, these U-turns will be illustrated through results from the project CLOTHILDE [1], which deals with the robotic handling of garments in the healthcare and logistics contexts, an application that requires addressing the six technical challenges mentioned above.

This shift from industrial to social robotics poses also ethical and social defies, which have led to a necessary confluence with the humanities. In addition to establishing regulations and standards, numerous educational initiatives have emerged, where science fiction often plays a prominent role by highlighting the pros and cons of possible future scenarios. In the context of university education, MIT Press has recently published my novel [2], along with ancillary materials to teach a course on "Ethics in Social Robotics and Artificial Intelligence". The goal is to provide useful guidelines for students and professionals (robot designers, manufacturers, and programmers), as well as for end users and the general public.

REFERENCES

[1] CLOTHILDE Project (2018-22): https://clothilde.iri.upc.edu/
[2] C. Torras: The Vestigial Heart. A Novel of the Robot Age. MIT Press, 2018. http://mitpress.mit.edu/books/vestigial-heart

Biography

Carme Torras is Research Professor at the Institut de Robòtica i Informàtica Industrial (CSIC-UPC) in Barcelona, where she leads a research group on assistive and collaborative robotics. She received M.Sc. degrees in Mathematics and Computer Science from the University of Barcelona and the University of Massachusetts, respectively, and a Ph.D. degree in Computer Science from the Technical University of Catalonia (UPC). Prof. Torras has published six research books and about three hundred papers in robotics, machine learning, geometric reasoning, and neurocomputing. She has supervised 19 PhD theses and led 16 European projects, the latest being her ERC Advanced Grant project CLOTHILDE – Cloth manipulation learning from demonstrations. Prof. Torras is IEEE and EurAI Fellow, member of Academia Europaea and the Royal Academy of Sciences and Arts of Barcelona. She has served as Senior Editor of the IEEE Transactions on Robotics, and has played different roles in the editorial boards of 10 journals, among which AI Communications, Robotics and Autonomous Systems, and Natural Computing. Convinced that science fiction can help promote ethics in AI and robotics, one of her novels – winner of the Pedrolo and Ictineu awards – has been translated into English with the title The Vestigial Heart (MIT Press, 2018) and published together with online materials to teach a course on "Ethics in Social Robotics and AI".

Christian Stöcker

PROFESSOR OF DIGITAL COMMUNICATION

Competence Center Communication (CCCOM)

September 9, 13:00-14:00

AI and Academia - are you ready to become toolmakers?

The machine learning landscape has changed and diversified in unexpected ways in the last few years. As machine learning methods become viable tools for other researchers, for areas ranging from material science to genomics, the demand for application oriented AI researchers is growing dramatically. At the same time, large companies offer fantastic salaries and working conditions for people who can credibly claim to be able to develop machine learning solutions for specific problems. Where do you go from here? Pure research, making tools, making money? A brief look at the most exciting field in informatics - from the outside.

Biography

Christian Stöcker is Professor of Digital Communication at the Competence Center Communication (CCCOM) at Hamburg University of Applied Sciences. There he is establishing a newsroom and in charge of a new master program. Besides, he is a columnist at Spiegel Online (one of the most widely read German-language news Websites) where he also had been Head of the Internet Department from 2011 to 2016. Christian Stöcker has published several books within the context of digitization's impact on society and is one of few German journalists who had access to Edward Snowden's archive of intelligence documents. He co-authored several investigative stories about the NSA, GCHQ, and other intelligence services.

Poster Sessions

Rules

- All accepted papers are presented as posters. All authors have recorded a 5-minutes video explaining their posters. These videos should be watched before the session as the sessions are only intended for discussions and not playing the videos.
- All posters (on-line and on-site) will be printed by Leiden University. Authors are not required to bring their printed posters. Posters for papers presented on-line will be also displayed on-site
- All accepted papers are divided into 5 poster sessions. All poster sessions will be made up of two parts to allow all posters to be presented to the on-line and on-site participants. This means that every poster will be presented twice. Presenters are requested to be available for both parts of the session.
  - *> Poster Session 1: September 7, 2020 09:30-10:30 and 11:00-12:00*
  - *> Poster Session 2: September 7, 2020 14:45-15:45 and 15:45-16:45*
  - *> Poster Session 3: September 8, 2020 09:30-10:30 and 11:00-12:00*
  - *> Poster Session 4: September 8, 2020 14:45-15:45 and 15:45-16:45*
  - *> Poster Session 5: September 9, 2020 09:30-10:30 and 11:00-12:00*
- In part 1 of each of the poster sessions, the on-site presenters scheduled for this session will present their work to all the on-site participants. At the same time, the on-line presenters scheduled for this session will present their work on-line to all the on-line participants.
- In part 2 of each of the poster sessions, the on-site presenters scheduled for this session will present their work once again on-line to all the on-line participants. At the same time, the on-line presenters scheduled for this session will present their work again on-line to all the on-site participants.

Feeling lost?
You are a presenter in a session if your paper is scheduled for this session. Otherwise you are a participant.

In the first hour of each Poster Session:

- If you are an on-site presenter, go to a scheduled physical room to present to the on-site participants
- If you are an on-line presenter, go to an on-line room to present to the on-line participants
- If you are an on-site participant, go to a scheduled physical room to discuss with the on-site presenters
- If you are an on-line participant, go to an on-line room to discuss with the on-line presenters

In the second hour of each Poster Session:

- If you are an on-site presenter, go to an on-line room to present to the on-line participants
- If you are an on-line presenter, go to an on-line room to present to the on-site participants
- If you are an on-site participant, go to an on-line room to discuss with the on-line presenters
- If you are an on-line participant, go to an on-line room to discuss with the on-site presenters

Allocation of papers to sessions

NB: This information might be out of date. Please check the Whova app for the latest information on the content of each session.

Session 1. September 7, 2020 09:30-10:30 and 11:00-12:00. On-site papers

* 15 Tobias Glasmachers and Oswin Krause: **The Hessian Estimation Evolution Strategy**

97 Marie Anastacio and Holger Hoos: **Model-Based Algorithm Configuration with Default-Guided Probabilistic Sampling**

134 Lennart Schäpermeier, Christian Grimme, and Pascal Kerschke: **One PLOT to Show Them All: Visualization of Efficient Sets in Multi-Objective Landscapes**

207 Jakob Bossek, Aneta Neumann and Frank Neumann: **Optimising Tours for the Weighted Traveling Salesperson Problem and the Traveling Thief Problem: A Structural Comparison of Solutions**

214 Nicholas Ross, Edward Keedwell and Dragan Savic: **Human Derived Heuristic Enhancement of an Evolutionary Algorithm for the 2D Bin Packing Problem**

233 Stephen Friess, Peter Tiňo, Stefan Menzel, Bernhard Sendhoff and Xin Yao: **Improving Sampling in Evolution Strategies through Mixture-based Distributions built from Past Problem Instances**

Session 1. September 7, 2020 09:30-10:30 and 11:00-12:00. On-line papers

2 Youhei Akimoto, Naoki Sakamoto and Makoto Ohtani: **Multi-Fidelity Optimization Approach under Prior and Posterior Constraints and its Application to Compliance Minimization**

113 Shengxiang Hu, Bofeng Zhang, Ying Lv, Furong Chang, and Zhuocheng Zhou: **Network Representation Learning based on Topological Structure and Vertex Attributes**

171 Benjamin Doerr: **Lower Bounds for Non-Elitist Evolutionary Algorithms via Negative Multiplicative Drift**

202 Mihai-Alexandru Suciu and Rodica Ioana Lung. Nash Equilibrium as Solution in Supervised Classification

203 Han Zhang, Jialin Liu and Xin Yao: **A Hybrid Evolutionary Algorithm for Reliable Facility Location Problem**

* 230 Weiyu Chen, Hisao Ishibuchi and Ke Shang: **Proposal of a Realistic Many-Objective Test Suite**

242 Bhupinder Singh Saini, Jussi Hakanen and Kaisa Miettinen: **A New Paradigm in Interactive Evolutionary Multiobjective Optimization**

261 Marko Durasevic, Domagoj Jakobovic, Marcella Martins, Stjepan Picek and Markus Wagner: **Fitness landscape analysis of dimensionally-aware genetic programming featuring Feynman equations**

279 Nihat Engin Toklu, Paweł Liskowski and Rupesh Kumar Srivastava: **ClipUp: A Simple and Powerful Optimizer for Distribution-based Policy Evolution**

* 292 David Lynch, James McDermott and Michael O'Neill: **Program Synthesis in a Continuous Space using Grammars and Variational Autoencoders**

295 Jamal Toutouh, Erik Hemberg and Una-May O'reilly: **Analyzing the Components of Distributed Coevolutionary GANs Training**

307 Sumit Mishra and Maxim Buzdalov: **Filter Sort is Ω(N3) in the Worst Case**

316 Ryoji Tanabe: **Revisiting Population Models in Differential Evolution on a Limited Budget of Evaluations**

322 Maxim Buzdalov and Carola Doerr: **Optimal Mutation Rates for the (1+λ) EA on OneMax**

Session 2. September 7, 2020 14:45-15:45 and 15:45-16:45 On-site papers

35 Jiawen Kong, Wojtek Kowalczyk, Stefan Menzel and Thomas Bäck: **Improving Imbalanced Classification by Anomaly Detection**

* 116 Tim Cofala, Lars Elend, Philip Mirbach, Jonas Prellberg, Thomas Teusch, Oliver Kramer: **Evolutionary Multi-Objective Design of SARS-CoV-2 Protease Inhibitor Candidates**

118 Gresa Shala, André Biedenkapp, Noor Awad, Steven Adriaensen, Marius Lindauer and Frank Hutter: **Learning Step-Size Adaptation in CMA-ES**
169 Mohammad Bagherbeik, Parastoo Ashtari, Seyed Farzad Mousavi, Kouichi Kanda, Hirotaka Tamura, and Ali Sheikholeslami: **A Permutational Boltzmann Machine with Parallel Tempering for Solving Combinatorial Optimization Problems**
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254 Elena Raponi, Hao Wang, Mariusz Bujny, Simonetta Boria and Carola Doerr: **High Dimensional Bayesian Optimization assisted by Principal Component Analysis**

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46 Lee A. Christie: Decentralized Combinatorial Optimization
102 Margarita Rebolledo, Frederik Rehbach, A.E. Eiben and Thomas Bartz-Beielstein: **Parallelized Bayesian Optimization for Expensive Robot Controller Evolution**
* 106 Laurent Meunier, Yann Chevaleyre, Jeremy Rapin, Clément H. Royer and Olivier Teytaud: **On averaging the best samples in evolutionary computation**
114 Susanne Dandl, Christoph Molnar, Martin Binder, and Bernd Bischl: **Multi-Objective Counterfactual Explanations**
151 Lauchlan Toal and Dirk V. Arnold: **Simple Surrogate Model Assisted Optimization with Covariance Matrix Adaptation**
183 Diana Cristina Valencia-Rodríguez and Carlos A. Coello Coello: **A Study of Swarm Topologies and Their Influence on the Performance of Multi-Objective Particle Swarm Optimizers**
240 Stanisław Kaźmierczak and Jacek Mańdziuk: **A Committee of Convolutional Neural Networks for Image Classification in the Concurrent Presence of Feature and Label Noise**
255 Lily Major, Amanda Clare, Jacqueline W. Daykin, Benjamin Mora, Leonel Jose Peña Gamboa, and Christine Zarges: **Evaluation of a Permutation-Based Evolutionary Framework for Lyndon Factorizations**
291 Marcin Czajkowski, Krzysztof Jurczuk and Marek Kretowski: **Generic Relative Relations in Hierarchical Gene Expression Data Classification**
293 Amín V. Bernabé Rodríguez and Carlos A. Coello Coello: **Generation of New Scalarizing Functions Using Genetic Programming**
303 Andrew M. Sutton and Darrell Whitley: **Approximation Speed-up by Quadratization on LeadingOnes**
* 318 Krzysztof Michalak: **Evolutionary Graph-based V+E Optimization for Protection Against Epidemics**
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121 Alexandru-Ciprian Zăvoianu, Benjamin Lacroix and John McCall: **Comparative Run-Time Performance of Evolutionary Algorithms on Multi-Objective Interpolated Continuous Optimization Problems**
122 Hao Tong, Leandro L. Minku, Stefan Menzel, Bernhard Sendhoff, and Xin Yao: **Towards Novel Meta-heuristic Algorithms for Dynamic Capacitated Arc Routing Problems**
147 Konstantinos Varelas, Anne Auger and Nikolaus Hansen: **Sparse Inverse Covariance Learning for CMA-ES with Graphical Lasso**
217 Moritz V. Seiler, Janina Pohl, Jakob Bossek, Pascal Kerschke and Heike Trautmann: **Deep Learning as a Competitive Feature-Free Approach for Automated Algorithm Selection on the Traveling Salesperson Problem**
265 Marcin Białas, Marcin Michał Mirończuk and Jacek Mańdziuk: **Biologically Plausible Learning of Text Representation with Spiking Neural Networks**

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32 Zhengxin Huang, Zefeng Chen, and Yuren Zhou: **Analysis on the Efficiency of Multifactorial Evolutionary Algorithms**

41 Mahfouth Alghamdi, Christoph Treude, and Markus Wagner: **Human-Like Summaries from Heterogeneous and Time-Windowed Software Development Artefacts**

56 Benjamin Doerr: **Exponential Upper Bounds for the Runtime of Randomized Search Heuristics**

60 Ying Bi, Bing Xue and Mengjie Zhang: **Evolving Deep Forest with Automatic Feature Extraction for Image Classification Using Genetic Programming**

74 Thomas Kaufmann, Matthias Horn and Günther R. Raid: **A Variable Neighborhood Search for the Job Sequencing with One Common and Multiple Secondary Resources Problem**

94 Alcides Fonseca, Paulo Santos and Sara Silva: **The Usability Argument for Refinement Typed Genetic Programming**

124 Wenjing Wang, Yuwu Lu, Zhihui Lai: **Canonical Correlation Discriminative Learning for Domain Adaptation**

126 Anh Viet Do and Frank Neumann: **Maximizing Submodular or Monotone Functions under Partition Matroid Constraints by Multi-objective Evolutionary Algorithms**

184 Jordan Bishop and Marcus Gallagher: **Optimality-based Analysis of XCSF Compaction in Discrete Reinforcement Learning**

186 Teppei Yamaguchi, Kento Uchida and Shinichi Shirakawa: **Adaptive Stochastic Natural Gradient Method for Optimizing Functions with Low Effective Dimensionality**

189 Wenjing Hong, Peng Yang, Yiwen Wang and Ke Tang: **Multi-Objective Magnitude-Based Pruning for Latency-Aware Deep Neural Network Compression**

204 Guoxia Fu, Chaoli Sun, Ying Tan, Guochen Zhang and Yaochu Jin: **A Surrogate-assisted Evolutionary Algorithm with Random Feature Selection for Large-scale Expensive Problems**

277 Marco Virgolin, Andrea De Lorenzo, Eric Medvet and Francesca Randone: **Learning a Formula of Interpretability to Learn Interpretable Formulas**

280 Denis Antipov, Maxim Buzdalov and Benjamin Doerr: **First Steps Towards a Runtime Analysis When Starting With a Good Solution**

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88 Léa Blaise, Christian Artigues and Thierry Benoist: **Solution Repair by Inequality Network Propagation in LocalSolver**

146 Anna V. Kononova, Fabio Caraffini, Hao Wang and Thomas Bäck: **Can compact optimisation algorithms be structurally biased?**

195 Yali Wang, André Deutz, Thomas Bäck and Michael Emmerich: **Improving Many-Objective Evolutionary Algorithms by Means of Edge-Rotated Cones**

198 Brahim Aboutaib, Sébastien Verel, Cyril Fonlupt, Bilel Derbel, Arnaud Leifooghe and Belaïd Ahiod: **On Stochastic Fitness Landscapes: Local Optimality and Fitness Landscape Analysis for Stochastic Search Operators**

220 Omar Abdelkafi, Bilel Derbel, Arnaud Liefooghe and Darrell Whitley: **On the Design of a Partition Crossover for the Quadratic Assignment Problem**

308 Furong Ye, Hao Wang, Carola Doerr and Thomas Bäck: **Benchmarking a ($\mu + \lambda$) Genetic Algorithm with Configurable Crossover Probability**

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23 Jesús Guillermo Falcón-Cardona, Arnaud Liefooghe and Carlos Artemio Coello Coello: **An Ensemble Indicator-based Density Estimator for Evolutionary Multi-Objective Optimization**

31 Mathew J. Walter, David J. Walker and Matthew J. Craven: **Visualising Evolution History in Multi- and Many-Objective Optimisation**
82 George T. Hall, Pietro S. Oliveto and Dirk Sudholt: **Fast Perturbative Algorithm Configurators**
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117 Alexander Hagg, Dominik Wilde, Alexander Asteroth, and Thomas Bäck: **Designing Air Flow with Surrogate-assisted Phenotypic Niching**
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170 Oscar Pacheco-Del-Moral and Carlos A. Coello Coello: **A SHADE-Based Algorithm for Large Scale Global Optimization**
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296 Paweł Liskowski, Krzysztof Krawiec and Nihat Engin Toklu: **Neuromemetic Evolutionary Optimization**
329 Szymon Wozniak, Michal Przewozniczek and Marcin Komarnicki: **Parameter-less Population Pyramid for Permutation-based Problems**

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154 Marjolein C. van der Meer, Arjan Bel, Yury Niatsetski, Tanja Alderliesten, Bradley R. Pieters and Peter A.N. Bosman: **Robust evolutionary bi-objective optimization for prostate cancer treatment with high-dose-rate brachytherapy**
157 S.C. Maree, T. Alderliesten, and P.A.N. Bosman: **Ensuring smoothly navigable approximation sets by Bézier curve parameterizations in evolutionary bi-objective optimization**
167 Arnaud Liefooghe, Sébastien Verel, Bilel Derbel, Hernan Aguirre, and Kiyoshi Tanaka: **Dominance, Indicator and Decomposition based Search for Multi-objective QAP: Landscape Analysis and Automated Algorithm Selection**
222 Hui Wang, Mike Preuss and Aske Plaat: **Warm-Start AlphaZero Self-Play Search Enhancements**

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18 Johannes Lengler and Jonas Meier: **Large Population Sizes and Crossover Help in Dynamic Environments**
25 Timo Kötzing and Carsten Witt: **Improved Fixed Budget Results via Drift Analysis**
30 Quentin Renau, Carola Doerr, Johann Dreo and Benjamin Doerr: **Exploratory Landscape Analysis is Strongly Sensitive to the Sampling Strategy**
38 Lei Sun and Ke Li: **Adaptive Operator Selection Based on Dynamic Thompson Sampling for MOEA/D**
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123 Jakob Bossek, Carola Doerr, Pascal Kerschke, Aneta Neumann and Frank Neumann: **Evolving Sampling Strategies for One-Shot Optimization Tasks**
135 Zhilei Ren, Shaozheng Dong, Xiaochen Li, Zonzheng Chi, and He Jiang: **Many-objective Test Database Generation for SQL**
162 Romain Orhand, Anne Jeannin-Girardon, Pierre Parrend and Pierre Collet: **BACS: A Thorough Study of Using Behavioral Sequences in ACS2**
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Session Chairs and Poster Introduction

Session 1: Sebastien Verel, Université du Littoral Côte d'Opale, France
Session 2: Arnaud Liefooghe, Université de Lille, France
Session 3: Pascal Kerschke, University of Münster, Germany
Session 4: Tobias Glasmachers, Ruhr-Universität Bochum, Germany
Session 5: Christian Grimme, University of Münster, Germany

Social events

Social event
Sunday 6 September, 18:00-21:30
Brasserie Buitenhuis
J. Pellenbargweg 2
2235 SP Valkenburg

Guided tour of Leiden
Monday 7 September, 17:30-19:00
The Math trail Leiden has been developed to see the city Highlights while getting various challenging mathematical questions. You will find out how much math can be hidden inside a city while learning about the history of it.

The booklet can be downloaded via https://www.universiteitleiden.nl/en/news/2017/01/math-trail-leiden.

Dinner
Tuesday 8 September, 18:30-22:30
Strandpaviljoen Surf en Beach
Boulevard Zeezijde 9
2225 BB Katwijk aan Zee

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Jayshri Murli
Local Team Member

Hestia Tamboer
Local Team Member

Notes

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