



29. Bremer Universitäts-Gespräche

Programme

Cognition-enabled Robotics: Democratising a Disruptive Technology

November 10th and 11th, 2016

Coordinators

Prof. Michael Beetz, PhD (University of Bremen) and
Prof. Dr. Andreas Birk (Jacobs University Bremen)

Wolfgang-Ritter-Stiftung
University of Bremen
Jacobs University Bremen
unifreunde



The Idea

Since 1988 the Wolfgang-Ritter-Stiftung, the University of Bremen and the Unifreunde e.V. have been organising the annual Bremer Universitäts-Gespräche. To this day, the goal is to encourage a dialogue on topics in a scientific context and beyond. The organisers hope for a lively exchange between representatives from academia, politics and business that can add new ideas and practical relevance to the topic.

On Thursday evening the 29th Bremer Universitäts-Gespräche will start with a reception at the robot lab of the Institute for Artificial Intelligence and a public lecture at the historic site, Stadtwage. The lecture will be followed by a reception and dinner arranged by Sparkasse Bremen. Here, guests will be given the opportunity to exchange ideas.

Friday will be dedicated to in-depth presentations and lively discussions. Participants will be able to enjoy an inspiring and undisturbed atmosphere of social exchange at the Dorint Park Hotel Bremen. Short talks will highlight specific aspects of the public lecture, after which guests can ask questions, offer opposing positions and contribute to the discussion.

The Organisers 2016

The Wolfgang-Rittter-Stiftung was founded in 1970 by the former owner of the Martin Brinkmann AG. The nonprofit foundation seeks to support young academics, research institutions, and other scientific activities. With the Bremer Universitäts-Gespräche, the Wolfgang-Ritter-Stiftung provides a platform for discussion and exchange between science and practice.

The University of Bremen, an academic Institution of Excellence, offers a future-orientated education to more than 20,000 students, with more than 100 courses in 12 faculties. As a site of internationally recognised research it attracts both young and experienced researchers. The dynamic development of the University's Technology Park is a visible sign for the successful exchange between academia and practice.

Jacobs University is a private, independent, English-language university in Bremen. Young people from all over the world study here in preparatory, Bachelor, Master, and PhD programmes. Internationality and transdisciplinarity are special features: research and teaching do not just pursue a single approach, they address issues from the perspectives of multiple disciplines. This principle makes Jacobs graduates highly sought-after new talents who successfully strike out on international career paths.

The Friends of the University and the Jacobs University Bremen Society (unifreunde) was founded in 1961. Their goal is to foster scientific education and research activities, and especially to strengthen the guiding spirit of the university.

The Topic

The combination of Artificial Intelligence (AI) and Robotics has become a disruptive technology in the recent past. After a long period of steady and incremental progress, the technologies emerging from this field of research will soon have a major impact on the way we live and work. Examples of breakthrough technologies include autonomous cars, massively improved computer vision, human-level Go players, and knowledge-processing systems that beat human champions in quiz shows.

These recent advances have caused substantial shifts in research agendas and have also received much attention in the media. On the business side, the world's largest companies are investing heavily in these technologies, hoping to gain an early advantage and be in the driver's seat when the markets really take off. Their expenditures already exceed worldwide public research funding by a wide margin.

This raises important questions for science and public policy: How can research institutions and academic research as well as enterprises – including small and medium-sized ones (SME) – benefit from these technologies? And how will they be able to influence their further development?

Answering these questions requires a research and innovation strategy that synergistically combines three separate ideas: “Cognitive Robotics” with its extensive field research, “Digital Innovation” as a driving force in related fields such as Machine Learning and Big Data Analysis, and “Open Research” as a sharing mechanism that combines the strengths of the individual stakeholders.

The Bremer Universitäts-Gespräche 2016 symposium will bring together researchers, hi-tech companies, major corporations and users of these technologies to explore the opportunities and risks of such an approach. It will attempt to generate impulses for shaping a future research strategy for cognition-enabled robotics solutions which benefit all stakeholders.



Thursday, 10th of November 2016

15:00 Reception in the Robot Lab of the Institute for Artificial Intelligence
with Live Demonstrations

17:30 Transfer to Stadtwaage

Public Lecture at the Historic Site Stadtwaage

18:00

Welcoming Notes *Prof. Dr. Helge Bernd von Ahsen*
Board Member of Wolfgang-Ritter-Stiftung

Opening Address *Prof. Dr. Eva Quante-Brandt*
Minister for Health, Science and Consumer Protection of the
Free Hanseatic City of Bremen

Keynote *Prof. Dr. Yiannis Aloimonos*
Institute for Advanced Computer Studies, University of Maryland (USA)

The Grammar of Action and Thought

20:00 Reception and Dinner at the Vorstandsgästeräume of Sparkasse Bremen AG

Friday, 11th of November 2016

Symposium at Dorint Park Hotel Bremen

9:00

Welcome

Prof. Dr.-Ing. Bernd Scholz-Reiter
Rector, University of Bremen

Prof. Dr.-Ing. Katja Windt
President, Jacobs University Bremen

9:15

Session 1 – Digital Innovation Platforms

Chair:

Prof. Dr.-Ing. Tanja Schultz (University of Bremen)

Notes:

Prof. Dr. David Lane (Heriot-Watt University, Edinburgh)
Digital Innovation Platforms for Robotics

Prof. Dr. Gordon Cheng (TU München)
Robots in the Age of Innovation – for robots for people

Discussion

10:30

Coffee Break



11:00

Session 2 – Cognitive Robotics

Chair:

Prof. Dr. Andreas Birk (Jacobs University Bremen)

Notes:

Prof. Tony Belpaeme (Plymouth University)

Memory systems for Robotic Agents

Prof. Gregory O'Hare, PhD

(UCD School of Computer Science & Informatics, University College Dublin)

Autonomous Robots and Intelligent Environments

Prof. Dr. Alin Albu-Schaeffer (DLR/Institute of Robotics and Mechatronics)

Towards Robot Co-workers

Discussion

12:15

Lunch Break at the Restaurant

13:30

Session 3 – Open Research

Chair:

Prof. Dr. Rainer Malaka (University of Bremen)

Notes:

Prof. Dr. Markus Vincze

(ACIN – Automation and Control Institute, TU Vienna)

Open Software Libraries and Systems for Robot Perception

Prof. Dr. Herman Bruyninckx (KU Leuven)

Exploiting the Wikipedia ecosystem to cross the „Valley of Death“ of robot-centred knowledge representation

Discussion

14:45

Coffee Break

15:15 **Panel Discussion: Democratising a Disruptive Technology**

Chair:

Dr. Uwe Haass (RoboConsult, München)

Speakers:

Dr.-Ing. Georg von Wichert (Siemens AG, München)

Dr.-Ing. Amos Albert (Bosch Deepfield Robotics, Ludwigsburg)

16:30 **Final Remarks**

Prof. Dr.-Ing. Bernd Scholz-Reiter

Rector, University of Bremen

17:00 **End**

