



TransAIR

TRANSATLANTIC DIALOGUE ABOUT
ARTIFICIAL INTELLIGENCE AND ROBOTICS



TRANSAIR BUILDS BRIDGES BETWEEN U.S. AND GERMANY

Artificial intelligence and robotics will trigger massive changes in the way we live, work, and perform scientific research in the coming decades. While research institutions and corporations are making significant progress in these fields, too few of them are cooperating closely with other AI communities around the world. Increased collaboration would provide massive benefits: Research would progress faster and in a more goal-directed fashion. The latter is essential to ensure that AI and robotics will serve the interests of society as a whole, not just a few lucky individuals or corporations. A common approach would allow us to democratize AI.

To promote the exchange between American and European AI communities, seven research institutions from Bremen, Germany, have founded the TransAIR network („Transatlantic AI-based Robotics“). Together with U.S. scientists, they have initiated discussions about essential questions concerning research, commercialization, and public debate on robotics and AI – especially regarding the world of work. The German Federal Ministry of Education and Research (BMBF) funded the TransAIR project within the framework of the initiative „The Future of Work“ for 18 months. The network partners intend to continue to cooperate after the official project’s end in May 2021.



BREMEN: WORLD-CLASS AI MEETS HEAVY INDUSTRY, INTERNATIONAL TRADE, AND IT EXPERTISE

Bremen is one of Germany’s leading industrial and trade hubs, but it is also home to a flourishing ecosystem of IT firms and universities. Among the area’s primary strengths is its high level of expertise in robotics and AI. This provides significant potential for cooperation between researchers, software companies, and regional industries, including the automobile and aerospace industries, machine building, logistics, and renewable energy.

Robots based on AI (Artificial Intelligence) are distinguished by their ability to gather information about the world around them and make decisions autonomously on the basis of what they have learned. Ideally, they can explain what they are doing and why they are doing it. By contrast, robots working in factories today are mostly “pre-programmed” and therefore incapable of adapting to new tasks independently.

By combining AI with cognitive sciences and robotics, local institutions have become a core part of Germany’s scientific community, which covers the entire spectrum of AI research. Several hundred specialists from Bremen contribute to AI research and development at a globally competitive level.

A UNIQUE HOLISTIC APPROACH

Bremen’s AI research network includes a wide range of specializations, methods and application areas. The core focus on cognitive-enabled robotics integrates all research specializations involved in creating robots that are capable of performing everyday activities such as cooking or setting the table. This comprehensive approach can rarely be found anywhere on Earth. It includes machine learning as well as cognitive architecture, cognitive-enabled manipulation, and verifiable cognitive autonomy.

The approach also includes building a layer of transfer mechanisms around the research activities to spread state-of-the-art AI methods and procedures as widely as possible. Institutions promote the application of AI and robotics in many different fields such as healthcare, logistics, retail, production, material sciences, aerospace, and geosciences.



PROMOTING OPEN RESEARCH

In addition to the local network, Bremen’s AI community continually expands its international ties. The University of Bremen initiated the TransAIR project on the premise that a transatlantic dialog provides the opportunity to share valuable insights and strengthen the AI community on both sides of the Atlantic. Cooperating research institutions in the United States and Germany can achieve better results and develop new areas of expertise by building on each other’s strengths.

An open research approach is best suited to facilitate this cooperation; therefore, TransAIR focuses on promoting open research for AI-based robotics (including open science, open-source software, open data, and citizen science). Sharing processes and data behind the research makes the scientist’s work reproducible and facilitates the accumulation of robotic skills.

The project’s initiators also believe that AI and Robotics are powerful technologies that will have many global applications with enormous societal and commercial impact. Therefore, cooperation between the two regions is inevitable. The multitude of difficult research challenges can only be solved efficiently if many great minds work together.



“THE NETWORK LIVES ON“

TransAIR achieved its objective to initiate discussions and start a transatlantic network of researchers. While Covid-19 required significant changes of plans and prohibited in-person meetings, the innovative on-line platform chosen for the two main conferences turned out to be more than a good substitute. Discussions were very lively, and the online format enabled the participation of researchers who could not have attended an in-person event. This included a significant number of high-profile researchers from the U.S. and Europe. Consequently, the feedback to the conferences was very positive – especially to the second one, when the hosts were able to use the learnings from the first event to optimize the experience for presenters and attendees.

While the project TransAIR officially ended in May 2021, the network will live on. Even before the end of the project, talks began about future cooperations which will further strengthen the relationship between TransAIR participants.

If you are interested in joining the TransAIR network, you are cordially invited to contact us.



CONFERENCE “DEMOCRATIZE AI“

TransAIR hosted the online conference “Democratize AI” from September 30 to October 14, 2020, to facilitate the exchange of ideas about AI research and commercialization. The event focused on advances, challenges, and potentials of open science in artificial intelligence and robotics. It featured thirteen talks, tutorials, interviews, and demonstrations by international researchers and practitioners. In addition, all speakers held Q&A sessions. A panel discussion and many networking opportunities were also part of the program.

Speakers included Yiannis Aloimonos (University of Maryland), Lydia Kavraki (Rice University), Chad Jenkins (University of Michigan), John Laird (University of Michigan), Radu Rusu (Fyusion Inc.), Jan Andersen (University of Southern Denmark), Michael Beetz (University of Bremen), Dave Coleman (PickNik), Moritz Tenorth (Magazino) and Alessandro Saffiotti (Örebro University).

WORKSHOP “COGNITIVE ARCHITECTURES FOR ROBOT AGENTS“

The TransAIR workshop “Cognitive Architectures for Robot Agents: Current Capabilities, Future Enhancements, and Prospects for Collaborative Development” brought together leading experts to address the challenges of developing cognitive architectures for robot agents. The primary goal was to discuss interdisciplinary collaborations and potential joint projects, ideally in an open-source open-systems framework. The workshop successfully connected researchers from various disciplines and created lively discussions about the best ways forward in creating cognitive architectures.

Speakers included Yiannis Aloimonos (University of Maryland), Minoru Asada (Osaka University), Tamim Asfour (Karlsruhe Institute of Technology), Angelo Cangelosi (University of Manchester), Yiannis Demiris (Imperial College London), Kazuhiko Kawamura (Vanderbilt University), Jeffrey Krichmar (University of California), Sean Kugele (University of Memphis), John Laird (University of Michigan), Tomaso Poggio (Massachusetts Institute of Technology), Helge Ritter (Bielefeld University), Matthias Scheutz (Tufts University), Alessandra Sciutti (Istituto Italiano di Tecnologia), Ron Sun (Rensselaer Polytechnic Institute) and Agnieszka Wykowska (Istituto Italiano di Tecnologia).

SUPPORTER



AN INITIATIVE OF THE



IMPRINT

TransAIR

<https://transair-bridge.org>

Institute for Artificial Intelligence
University Bremen
Am Fallturm 1
28359 Bremen Germany

Tel.: +49 421 218 64000/64038
Fax: +49 421 218 64047
E-Mail: contact@transair-bridge.org



DIFFERENT STRENGTHS IN THE U.S. AND GERMANY

One of TransAIR’s primary goals was to explore the United States’ strength in deep learning methods and Germany’s predominantly hybrid approach to see how everyone can utilize “the best of both worlds” for mutual benefit. Many American companies are very good at machine learning. At the same time, Germany contributes some of the leading research when the goal is to make AI robust and transparent with more classical methods involving symbols.

To promote these goals, TransAIR facilitated discussions at conferences and workshops, which were initially planned in the U.S. but had to be moved online because of the pandemic. TransAIR also offered transatlantic research opportunities through cooperation with German research projects.