Fascination AI – A Tool that Changes the World

Learning Systems were in the Focus of KIT's 2019 Annual Celebration

At the Annual Celebration, the President of KIT, Holger Hanselka, spoke about the opportunities and challenges associated with new technologies, such as AI. (Photo: M. Breig/KIT)

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Artificial intelligence (AI) and derived technologies and applications will determine our future daily life, our work environment, and our society much more than they do today. Learning systems offer great potentials for shaping our information society, but also for safe and environmentally friendly mobility. Visions and questions relating to AI, also in the context of digitalization, were in the focus of the 2019 Annual Celebration of Karlsruhe Institute of Technology (KIT). Here, also Theresia Bauer, Baden-Württemberg Minister of Science, Research, and the Arts, spoke to the audience.

"Artificial intelligence is developing at high speed, it has an enormous change potential which probably will be even revolutionary," said the **President of KIT, Professor Holger Hanselka**, at the Annual Celebration. He emphasized the importance of using AI for the benefit of society. "At KIT, we see our responsibility not only in pushing the development of new technologies, but also in assessing their impacts and considering their risks from the very beginning. Doing this, we want to support in particular decision-makers in politics, economy, and society."

AI will have influence on the areas of energy, mobility, and information in particular, Hanselka said. It is therefore an outstanding objective to position the KIT and the region of Karlsruhe among the AI locations of highest performance on both the national and international levels. “We already are excellently prepared and do not have to be afraid of competition: the well-founded AI expertise of science institutions in Karlsruhe is recognized worldwide, we also have excellent contacts to partners from industry,” Holger Hanselka pointed out. This particularly applies to economically and strategically relevant applications of robotics, automation, autonomous systems, and human-machine interaction. Among others, Hanselka considered the joint acquisition of the ROBDEKON Competence Center (Robot Systems for Decontamination in Hostile Environments) with the Fraunhofer Institute of Optronics, System Technologies and Image Exploitation (IOSB) that coordinates the project, the FZI Research Center for Innovation Technology, an innovation partner of KIT, with the Federal Ministry of Education and Research, and the selection of Karlsruhe as a location of the Digital Hub relating to artificial intelligence by the Federal Ministry of Economic Affairs and Energy as recent great success. Moreover, the Karlsruhe Research Factory of KIT and the Fraunhofer Society that is presently being established on KIT’s Campus East will make major contributions to the AI strategy of the federal government with respect to the factory of the future. “Economy and science in Baden-Württemberg and beyond profit from the already established close scientific collaboration in Karlsruhe,” Hanselka underscored.

Theresia Bauer, Baden-Württemberg Minister of Science, Research, and the Arts acknowledged the development of KIT in her speech.
(Photo: M.Breig/KIT)

Not least, AI will play a decisive role in improving IT security systems. “AI will enable new types of attacks on IT systems and AI systems themselves will require special IT security processes,” Hanselka said. These aspects are being studied by KIT’s Competence Center for Applied Security Technology KASTEL that was established in 2011 already. “With the support of the federation and the state, we plan to significantly strengthen KASTEL in future and to be one of the few locations in Europe, where applied IT security is developed. In this way, KASTEL will be given additional unique features.”

Now, it is important to continue work along this line together with politics and industry, in particular in the areas of big data, AI, machine learning and IT security. This will require constant further development of the national AI strategy and continued political support to further strengthen the scientific and technological competitiveness of Germany, Hanselka said.

“Artificial intelligence is a key technology and, as such, it will change our world. It will change our life in many areas and – despite all misgivings – make it better,” emphasized **Minister Theresia Bauer**. Research is the most important basis and indispensable prerequisite for this. “We need inventive talents and creative ideas, combined with profound expert knowledge and insights into the different application environments in industry and science. KIT offers best prerequisites for this. As ‘The Research University in the Helmholtz Association,’ it has an unmistakable profile and excellently combines academic education with latest research. In this environment, scientifically consolidated responses to the big challenges of our time can be developed. The KIT is well prepared to further advance in the era of digitalization and to pave the way with scientific excellence.”

A panel of experts of KIT talked about the visions, opportunities, and risks of learning systems at the annual celebration. (Photo: M.Breig/KIT)

The **Chairperson of the Supervisory Board of KIT, Professor Renate Schubert**, said: “I experience the KIT as a dynamic place full of creativity and agility as well as of great strategic vision. Established just ten years ago, the KIT, ‘The Research University in the Helmholtz Association,’ looks back on a tradition of nearly 200 years of its precursory institutions. This is both encouragement and commitment to shape the German system from Karlsruhe and to strengthen international attractiveness,” Schubert said. For this, visible successes, such as the recent acquisition of two Clusters of Excellence in the Excellence Competition launched by the federation and the states, represent important milestones: The Supervisory Board committedly and reliably will stand on the side of KIT in future, she emphasized.

The **Lord Mayor of the City of Karlsruhe and Chairman of Karlsruhe Technology Region, Dr. Frank Mentrup**, pointed out: “Thanks to its outstanding research institutions, such as the KIT, the science city of Karlsruhe and the Technology Region are well prepared for the international competition in recruiting qualified and skilled experts and provide excellent prerequisites for the establishment of high-tech companies.” In his welcome address, he underscored the successful collaboration of public authority, economy, and science in the region and acknowledged the future-oriented ideas of the many innovative minds at KIT.

Important events of and milestones reached by KIT in research, academic education, and innovation in the past year are presented by the slide show of the Annual Celebration:
http://www.kit.edu/kit/25060.php

Panel Discussion: Fascination AI

In line with the current Science Year 2019 – Artificial Intelligence – of the Federal Ministry of Education and Research, the "Fascination AI – A Tool that Changes the World" was subject of the panel discussion presented by Markus Brock. With Professor Gisela Lanza, Head of the wbk – Institute of Production Science, Professor Alexander Waibel, Head of the Institute for Anthropomatics and Robotics, and Professor Michael Decker, Head of the Informatics, Economics, and Society Division, he talked about visions, opportunities, and risks of learning systems.

KIT Department Teaching Awards

The Executive Board of KIT grants department teaching awards to acknowledge research- and application-oriented teaching modules as well as courses at the KIT departments, which are characterized by innovative teaching and learning approaches, interdisciplinarity, and up-to-dateness of the knowledge conveyed. At the Annual Celebration, Professor Alexander Wanner, Vice-President for Higher Education and Academic Affairs of KIT, handed over the awards to twelve lecturers of KIT. The award is endowed with a prize money of EUR 10.000 each and is granted annually to teachers working at the eleven KIT departments.

Click here, for the video portraits of the award winners:
https://www.kit.edu/forschen/25055.php

Science Slam: Algorithms Learn to Learn

Learning algorithms need thousands of learning examples to solve tasks, whereas humans are able to solve comparable exercises with a few examples only. In his presentation, Jonas Rothfuss, alumnus of KIT, explained the reason why. He presented meta learning as a method for algorithms to "learn" their own learning process.

This press release is available on the internet at http://www.sek.kit.edu/english/press_office.php.

The photo in the best quality available to us may be downloaded under www.kit.edu or requested by mail to presse@kit.edu or phone +49 721 608-21105. The photo may be used in the context given above exclusively.

This year's **anniversary logo** recalls the milestones reached by KIT and its long tradition in research, teaching, and innovation. On October 1, 2009, KIT was established by the merger of its two predecessor institutions: the Polytechnic School and later University of Karlsruhe was founded in 1825, the Nuclear Reactor Construction and Operation Company and later Karlsruhe Research Center in 1956.