KCIST NEWSLETTER
January 2022

Projects and Research Activities

ABBA - AI for Business | Business for AI
Interuniversity, modular program to build AI competencies in business and economics (BMBF)

The *ABBA* project, funded by the German Federal Ministry of Education and Research, trains students in how artificial intelligence (AI) technologies can be embedded in AI-based information systems to create business value. A particular focus of the project is the development of an AI workshop that will support Augmented Hybrid Learning.

The project partners are: KIT, Uni Hohenheim, Uni Bayreuth, FH Frankfurt. The *ABBA* project started on December 1, 2021 and has a duration of 3 years. At KIT, the chairs of Professor Christof Weinhardt and Professor Alexander Mädche from the Institute for Information Systems and Marketing (IISM) are involved in the project.

Focus Program "Sensor-integrated machine elements as pioneers of for widespread digitization" (DFG)

The DFG Focus Program *2305*, which started in November 2021, deals with the scientific fundamentals for "sensor-integrated machine elements", their methodically supported conceptual design and system integration. The priority program thus contributes to the comprehensive digitization of machines, devices, and plants by means of high-quality sensor data as well as data acquisition and processing with "in-situ" sensor systems. KIT is involved in the program committee with Professor Sven Matthiesen (Institute for Product Development - IPEK), Dr.-Ing. Thomas Gwosch (IPEK) as elected working group spokesman, and in a research project (IPEK together with partners from TU Darmstadt).

Outstanding Publications

- **Study involving data acquisition and evaluation of hand-held power tools using consumer-grade sensors, such as an inertial measurement unit, in real-world applications, resulting in new potentials for product use and product development.**
  Dörr, M.; Ott, L.; Matthiesen, S.; Gwosch, T. "Prediction of Tool Forces in Manual Grinding Using Consumer-Grade Sensors and Machine Learning" in: *Sensors* 2021, 21, 7147. ([Link to the publication](#)).

Awards and Prizes

Science Award of the Gisela and Erwin Sick Foundation at KCIST

This prize is awarded to both basic research-oriented and application-oriented work in the area of the KCIST research topics. The prize for the best dissertation is endowed with 7.000 €, the best thesis with 3.000 €.

The award winner for the best dissertation at KCIST in 2020 is **Dr.-Ing. Andreas Kuhnle**, with his dissertation "Adaptive Order Dispatching based on Reinforcement Learning". Mr. Kuhnle received his PhD with honors from the wbk - Institute of Production Engineering under Professor Gisela Lanza.

The prize for the best thesis in 2020 went to two young scientists, so the prize money was split and €1.500 each went to:

Peter Koepernik, with the bachelor thesis "Consistency of Nearest Neighbor and Gaussian Process Regression". The main speaker was Professor Uwe Hanebeck from the Institute of Anthropomatics and Robotics (IAR).

Lukas Rapp, with the bachelor thesis "Analysis of Product and Staircase Codes for Data Transmission over Channels with Errors and Cancellations". Keynote speaker was Professor Laurent Schmalen from the Institute of Communications Engineering (CEL).

KIT PhD Award

Dr.-Ing. Alina Roitberg, head of the Activity Recognition group at the chair of Professor Rainer Stiefelhagen (IAR), has won the *PhD Award* for the class of 2020/2021 with the dissertation "Uncertainty-aware Models for Deep Learning-based Human Activity Recognition and Applications in Intelligent Vehicles".

For more information and the award winners from other disciplines, please visit the [KHYS website](#) (Karlsruhe House of Young Scientists).

EXIST Start-up Grant

Former students and participants of the CV:HCI internship "Computer Vision for Human-Machine Interaction" receive the *EXIST Start-up grant* of 135.000 € for further development of the algorithm created in the internship into a business-ready and innovative product: an app for fully automated meal analysis in recorded images of dishes using machine learning and AI.

Healthify Team: **Verena Heußer, Robin Rüde, Tobias Kahlert, Lukas Frank, Dr.-Ing. Alina Roitberg** (former supervisor of the internship), scientific mentor: Professor Rainer Stiefelhagen.

Start-up BW Elevator Pitch Hightech Cup

The start-up from the Institute for Business Informatics and Marketing, **Respeak**, has won the *Start-up BW Elevator Pitch Hightech Cup* of the Ministry of Economics, Labor and Tourism Baden-Württemberg.

Foto: Start-up BW Elevator Pitch

Further information in the KIT [press release](#) as well as on the [Respeak](#) webpage.

Public Relations and Events

The Real World Lab "Robotics AI" at ZKM

In December, the exhibition "BioMedia - The Age of Media with Life-like Behavior" opened at the ZKM │Center for Art and Media. Among the exhibition objects is also the humanoid robot "Pepper", programmed for its appearance within the framework of the project "Real World Lab - Robotics AI" at KIT, headed by Professor Tamim Asfour (IAR) and funded by the Ministry of Science, Research and the Arts Baden-Württemberg. Pepper welcomes the guests, gives them information about the exhibition as a contact person, and invites them to social communication on the sofa. The ZKM's extremely broad visitor clientele, ranging from school classes to groups of senior citizens, offers a unique breadth of experiments, observations and insights.

KD²Lab in an episode of BR's "Beta Stories" series

Doctoral student Florian Kuhlmeier was interviewed for an episode of the documentary series "Beta Stories" of the TV station BR with the title "So realistisch sind Beziehungen mit Robotern" (how realistic are relationships with robots) to report about the research at KIT and especially at the KD²Lab (Karlsruhe Decision & Design Lab) with chat bots based on artificial intelligence, which are intended to help young people to get over depressions.

Link to the video clip at the ARD media library

Report in Computerwoche about the project MeKIDI

The German weekly *Computerwoche* reported on the MeKIDI (Menschengerechte KI-basierte Prozessdigitalisierung in der Energiewirtschaft / People-oriented AI-based process digitalization in the energy industry) research project funded by the German Federal Ministry of Labor and Social Affairs. The project is led by Professor Alexander Mädche of the Institute for Information Science and Marketing (IISM).

Read the article online on the Computerwoche webpage (German).

KI@KIT mailing-list (ki@listst.kit.edu)

The purpose of this list is to exchange information on topics related to artificial intelligence at KIT. All interested KIT employees and students can subscribe to the list (further information can be found on the website https://www.kcist.kit.edu/775.php).

Contact:

Prof. Dr.-Ing. Tamim Asfour

Scientific Spokesperson
tamim.asfour∂kit.edu

KIT-Center
Information · Systems · Technologies

Adenauerring 2
Bldg. 50.20
76131 Karlsruhe