FZI-Pressemitteilung

The FZI at Hannover Messe 2023: Between Inspection and Participation

The FZI returns to the Hannover Messe in presence this year. The joint stand with the Karlsruhe Institute of Technology (KIT) allows interesting insights into the diverse research of the transfer institution: From the autonomous cargo bike to the mobile robot Spot, the demonstrators show how the use of artificial intelligence, robotics, sensor technology and virtual reality can master social and industrial challenges.

Karlsruhe, April 4, 2023 – Will cargo bikes soon go shopping on their own? What tasks can legged robots take on in industry and how can we enable more citizen participation in the digital space? The FZI returns to Hannover Messe with answers to these questions. At the joint stand with the Karlsruhe Institute of Technology (KIT) in hall 2, stand A46, all visitors can get to know the research work of the FZI.

FLOOW: a flexible mobility and cargo system for factory traffic

With FLOOW, the FZI and KIT are working on new possibilities for the automated mobility of people and goods away from cars, trucks and public transport. The system developed by the two research institutes will be presented at Hannover Messe using an autonomous cargo bike as an example. It enables robust and highly accurate localization of indoor and outdoor mobility systems, generalized environment recognition, and risk-aware maneuver planning. These rely on neural network-based AI as well as special energy-efficient hardware that can also be integrated into vehicles in a space-saving manner. The aim of the project is to integrate the prototypes into an overall mobility system with intelligent fleet use on a factory site as an exemplary implementation for urban use when the prototypes are ready for the market.

Autonomous driving at the FZI: moving networked and safely through the city

Not only vehicles, but also road infrastructure is becoming smarter. High-precision cameras and sensors ensure microscopically accurate traffic recording in real time. Radio cells enable Vehicle2X communication and networked automated driving via special WLAN. With Infra2Go, the FZI presents a mobile system developed within the framework of the Test Area Autonomous Driving Baden Württemberg (TAF BW) that can detect and communicate with traffic. The mobile usable platform enables the evaluation of sensor technology and algorithms for data processing for future stationary infrastructure. Through a demonstration at the stand, visitors can learn about the mechanisms used to protect the AI for object recognition against external interference and manipulation, and even influence the system's object recognition. In addition, the automated, networked driving functions are shown, as they are used by the FZI in urban traffic, for example in the EU project SHOW.

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Automated inspection: autonomous mobile robots in industry

The legged robot Spot flexibly performs various inspection tasks in an industrial scenario in an FZI test environment. The autonomous monitoring of technical plants succeeds through the interaction of innovative tools such as modern sensor technology, robotics, AI and software developed at the FZI. These tools allow the desired results to be achieved efficiently and cost-effectively. New technologies such as spectral cameras, gas sensors or high-resolution 2D cameras are now part of the technical standard. Especially commercial legged robots, such as the Boston Dynamics model Spot show their strengths and advantages in real plants: For example, environments designed for humans with stairs pose no obstacles for them. Routine inspections can thus be carried out reliably in any environment.

Delfine: intelligent energy-flexible manufacturing in the dynamic electricity market

The project Delfine connects electricity producers as well as industrial electricity consumers. It deals with the efficient use of different energy sources and the associated production planning in a dynamic energy price environment. By means of a virtual reality application, users can interactively experience what energy flexibility means: the flexible modeling of production processes in order to avoid peak loads and to react efficiently to price fluctuations. The users can compete with an AI to see who can better combine the diametrically opposed goals of minimizing energy costs and minimizing production time in a production plant with CNC and other processing machines. After the virtual production is completed, the efficiency of the production planning is measured and put in relation to the solution of the reinforcement learning algorithm.

HoP Participator: meeting social challenges with digital participation

Digital participation via building blocks: Based on the Kollaborat.io platform, individuals and organizations have the opportunity to pose their own questions, also known as challenges, using the House of Participation (HoP) demonstrator. They can then develop these challenges in a participatory manner by engaging the public. For this purpose, the challenges can be answered by other users with proposed solutions (ideas). The platform offers a modular kit consisting of texts, images, and graphs that can be used to effortlessly describe and share one’s suggestions.

The HoP uses the platform as a demonstrator for inclusive and innovative participation projects to discuss research within FZI use cases. For instance, the demonstrator could foster collaboration between citizens and professionals in the development of technology solutions, thereby democratizing the technology development process. A case in point is the cultivation of public trust and confidence in autonomous driving cars, or the creation of incentive structures for energy saving.

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Digital Hub Karlsruhe Applied Artificial Intelligence: support for AI startups

Together with selected network partners, the Digital Hub Applied AI (Karlsruhe) will present exciting projects from the field of AI research and application at the FZI stand. The Digital Hub is part of the Federal Government's de:hub initiative, initiated in 2017 by the Federal Ministry of Economic Affairs and Climate Action, and launched with the aim of bringing AI methods and technologies into application. Since the beginning, the vision of the Hub has been to be the central networking platform and nationwide contact point for AI experts from companies, startups and research and for (future) AI users. Through a strong network, it can support AI experts and users with tailored offers – for example, in project initiation and support – provide visibility and events, and achieve sustainable ecosystem maintenance and thus networking.

KI2Business: Is it the way to paradise or the wrong track?

On April 20, 2023, the panel discussion *KI2Business – Is it the way to paradise or the wrong track?* (*KI2Business: Paradies oder Irrweg?)* will take place at the Tech Transferstage in hall 2. Together with researchers of KIT and the FZI, the opportunities of AI in industry and everyday life, but also the dangers for companies and society will be discussed. The discussion will be moderated by FZI Department Manager Dr.-Ing. Stefan Schwab.

For further information on the FZI at Hannover Messe 2023, please visit www.url.fzi.de/eHM2023. Image material is available for download at https://url.fzi.de/pmhm23 for editorial coverage with reference to the image source "Image: INDICATION OF IMAGE RIGHTS".

About the FZI Research Center for Information Technology

The FZI Research Center for Information Technology with its head office in Karlsruhe and a branch office in Berlin is a non-profit institution for applied research in information technology and technology transfer. Its task is to provide businesses and public institutions with the latest research findings in information technology. It also qualifies researchers for their career in academics or business as well as self-employment. Together with professors from different faculties, research teams at the FZI interdisciplinarily develop and prototype concepts, software, hardware and system solutions for their clients. The FZI House of Living Labs offers a unique research environment for applied research. The FZI is an innovation partner of the Karlsruhe Institute of Technology (KIT).

More information

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