PRESS RELEASE

Fraunhofer at the DMEA

Fraunhofer to showcase digital healthcare of tomorrow

Improved patient care, speedier diagnoses and savings in care costs – the digital transformation of the healthcare industry promises solutions to the urgent problems of our time. Increasingly, systems based on artificial intelligence (AI) are being employed. But how can these be used effectively while maintaining compliance with data protection laws? Experts from the Fraunhofer-Gesellschaft will be providing insights into their current work at DMEA 2023 in Berlin and answering questions about tomorrow's health IT at booth D107 in Hall 2.2.

Health research occupies a prominent position at the Fraunhofer-Gesellschaft. Together with partners from the world of medicine, a number of institutes are working to develop digital solutions for the prevention of disease as well as the diagnosis, therapy and rehabilitation of patients. The aim is to streamline processes and also to make affordable care available for an increasingly aging society. The resulting technologies support players in the healthcare sector, such as clinics and medical staff, as well as patients by providing them with applications for use at home.

Apps and applications for optimized and individualized treatment

The Fraunhofer Institute for Intelligent Analysis and Information Systems IAIS will be demonstrating AI-based software for the automated processing of medical documents. Advances in AI research are enabling the reliable and comprehensible use of large-scale language models (foundation models) for applications such as the generation of physicians' letters, information extraction and billing. This saves time in everyday clinical practice and guarantees high-quality treatment.

The Fraunhofer Institute for Computer Graphics Research IGD is making an active contribution to personalized medicine with digital solutions. Its software applications support specialist staff and patients in prevention, diagnostics and therapy. These include a new method for allergy test evaluation on a smartphone and the option of performing visual-interactive data analysis based on cohorts, for example in the area of chronic inflammatory bowel disease. The Guardio® AI-based software package

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converts heart movements into an ECG while the patient's own smartphone is placed in proximity to the chest.

The main concern of the Fraunhofer Institute for Cognitive Systems IKS is trust and efficiency when artificial intelligence is employed in medical care. The research team will be presenting new quantum computing approaches in the context of AI to improve the early detection of breast cancer. They will also be showing how routine clinical data and AI can be reliably combined to support doctors in their decision making.

In modern clinical practice, intelligent data integration is becoming increasingly important for medical staff. With the help of new algorithms and innovative AI, more precise diagnoses and personalized therapy plans can be created automatically. At the DMEA, the Fraunhofer Institute for Digital Medicine MEVIS will present software solutions for data structuring and guideline-based decision-making to interested companies. In addition, MEVIS experts will demonstrate optimized image-based follow-up of cancer treatments using AI.

The Fraunhofer Center for Digital Diagnostics addresses the improvement of medical care in rural areas through patient-oriented diagnostics and digitalization. Data discontinuities in patient care are analyzed and optimized. Healthcare in rural areas is facilitated by the development of a fully automated, mobile health center. Next-generation virus tests will allow for needs-based diagnostics and outbreak containment. Intelligent wound care will enable faster healing of festering wounds.

In Portugal, the Fraunhofer Center for Assistive Information and Communication Solutions AICOS develops technologies for digital healthcare, in which predictive, preventive, personalized and participatory medicine plays a key role. The team will be presenting the results of its work to the German health market at the DMEA. The technologies developed facilitate human intervention, connectivity and collaboration in healthcare. In the matter of decentralized healthcare, the Fraunhofer Center has set itself the goal of improving access to early treatment, supporting clinical decisions with the help of algorithms, generating transparent and explainable AI-based decisions, and minimizing bias and unfairness.

Tools and structures for IT professionals and health management

The main role of the National Research Center for Applied Cybersecurity ATHENE is to oversee the digital transformation taking place in medicine and to design solutions for secure digitalization in healthcare. The Center seeks to establish how sensitive health data can be securely transmitted, stored and processed and how access controls can be meaningfully designed for Cloud solutions. Targeted visualization of data protection information provides support here, likewise a digital patient model serving as a data-supported decision-making aid.

Fraunhofer Institute for Applied Information Technology FIT has a long tradition of assisting the healthcare sector by means of IT. The focus is on supporting diagnostics and therapy as well as clinical and pharmacological research, employing integrated approaches from molecular diagnostics, image and signal analysis, data integration and AI. The increasing digitalization of the healthcare system has led to the additional collection and use of patient data, telemedicine applications and health apps.

DPM.research from the Fraunhofer Institute for Integrated Circuits IIS is an individually configurable, digital study management tool for the simple and effective implementation of clinical studies of all kinds. Patient Reported Outcome Measures (PROMs) are recorded in the course of the patient's everyday routine by means of wearable connections in compliance with GDPR and medical quality standards and then transferred to a web-based server via an app. Data changes are tracked through audit trails. As an eCRF system, DPM.research facilitates the integration of different data sources, standardized questionnaires and scores.

The Fraunhofer Institute for Software and Systems Engineering ISST researches and develops software technologies for digital and data-driven healthcare. In this way, concepts, architectures, prototypes and components for transparent, interoperable, federated and sovereign health data spaces are created. At the DMEA, the Fraunhofer ISST experts will be presenting a range of data room projects related to infrastructure (Health-X dataLOFT, ivy.connect, MII), data use (DARE, DAWID) and services/applications (ADLER).

Further information on Fraunhofer-Gesellschaft exhibits at the DMEA can be found here: Fraunhofer at the DMEA 2023.

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