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Fit for the Digital Transformation in Medicine – the University of Bremen and Fraunhofer MEVIS Intensify Their Partnership in Computer Science Education

The Fraunhofer MEVIS Institute for Medical Image Computing – in short: Fraunhofer MEVIS – is one of the world's leading research centers in digital medicine. In order to prepare computer science students for challenges in this area, the institute and the University of Bremen are now cooperating even more closely in teaching. This winter semester saw the introduction of a new study area called Medical Computing in the Faculty of Mathematics / Computer Science.

Whether in health care, diagnosis, surgery, or treatment: today, digital medicine plays an important role in everyday clinical life. The aim is for physicians to make the best possible use of the opportunities offered by big data, artificial intelligence, and imagebased medicine. The methods in digital medicine are developed in computer science. The new study focus of Medical Computing in the Faculty of Mathematics / Computer Science at the University of Bremen reflects groundbreaking developments in this field. For example, students gain insights into medical image processing and methods that can help physicians analyze increasingly complex situations. In order to create a connection to practice, clinical staff will also come to the university and be integrated into the teaching operations.

Fraunhofer MEVIS Is Closely Associated with the University

Fraunhofer MEVIS, headed by physicist Horst Hahn and physician Ron Kikinis, has been closely associated with the University of Bremen since its beginnings. Today's Research Center emerged from the Center for Complex Systems and Visualization (CeVis) at the University of Bremen, which was founded in 1992 and, like the university, is a member of the U Bremen Research Alliance. In addition to the university, the members of the association include eleven non-university research institutes from the region financed by state and federal governments. Employees of Fraunhofer MEVIS not only conduct joint research projects with colleagues from the University of Bremen, but have also been active in university teaching for many years.

Harvard Professor Ron Kikinis came to Bremen in 2014. In addition to other responsibilities, he heads the Medical Image Computing working group at the Faculty of Mathematics/Computer Science. Professor Matthias Günther – head of the MR Physics working group at Fraunhofer MEVIS and professor of physics – has been teaching at the university since 2009. In addition, he conducts research in the

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laboratory of magnetic resonance tomography, which has been operated jointly with the university since 2011.

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Four Main Areas of Study

In addition to the established study areas of Security and Quality (SQ), Artificial Intelligence, Cognition, and Robotics (KIKR), and Digital Media and Interaction (DMI), the Faculty of Mathematics/Computer Science now offers a total of four study areas with Medical Computing.

Embedded in a worldwide network of clinical and academic partners, **Fraunhofer MEVIS** develops real-world software solutions for imagesupported early detection, diagnosis, and therapy. A strong focus is placed on cancer as well as diseases of the circulatory system, brain, breast, liver, and lung. The goal is to detect diseases earlier and more reliably, tailor treatments to each individual, and make therapeutic success more measurable. In addition, the institute develops software systems for industrial partners to undertake image-based studies to determine the effectiveness of medicine and contrast agents. To reach its goals, Fraunhofer MEVIS works closely with medical technology and pharmaceutical companies, providing solutions for the entire chain of development from applied research to certified medical products. www.mevis.fraunhofer.de/en

The Fraunhofer-Gesellschaft is the leading organization for applied research in Europe. Its research activities are conducted by 72 institutes and research units at locations throughout Germany. The Fraunhofer-Gesellschaft employs a staff of more than 25,000, who work with an annual research budget totaling 2.3 billion euros. Of this sum, almost 2 billion euros is generated through contract research. Around 70 percent of the Fraunhofer-Gesellschaft's contract research revenue is derived from contracts with industry and from publicly financed research projects. International collaborations with excellent research partners and innovative companies around the world ensure direct access to regions of the greatest importance to present and future scientific progress and economic development.