

PRESS RELEASE

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Digitization in medical engineering: Fraunhofer IIS at MEDICA 2017

Erlangen/Düsseldorf: At MEDICA 2017, the Fraunhofer Institute for Integrated Circuits IIS is presenting the MCube microscope system for the automatic pre-analysis of malaria pathogens, as well as optical 3D techniques for improved orientation in endoscopic views and the CardioSHIRT with integrated multichannel ECG.

212 million new cases of malaria worldwide in 2015

Within a wider multidisciplinary project, researchers at Fraunhofer IIS have developed a computer-assisted system for the automatic recording of blood smears and detection of malaria pathogens in thick blood films. With 212 million new cases in 2015, MCube can play an important role in the fight against the disease.

Unlike conventional microscopic examinations, for which an expert often has to scrutinize a large number of fields of view, the MCube microscope system carries out a pre-analysis of the digitized image data. All potential malaria pathogens found by the system are then displayed on the screen in an overview. The expert only has to analyze these objects. This approach has proved very promising in evaluation studies carried out with other institutes working in the field of malaria diagnosis. Moreover, the digitization of the blood smears and their archiving by MCube assists examiners in their quality assurance in the laboratory.

Minimal invasive surgery with 3D panorama view

As part of the “3DInMed” project completed at the end of September 2017, researchers at Fraunhofer IIS developed a technique for stereo-endoscopic panoramic imaging in 3D. The system improves the opportunities for expanding the field of view and documenting images in minimal invasive surgical procedures. To do this, the developers used the methods of digital image processing – known as stitching technologies – to generate panoramic 3D images of the operating area from the image data stream of a stereo endoscope. These 3D image panoramas enable a dynamic expansion of the stereoendoscope’s field of view while preserving the visual depth, so that surgeons better orientate themselves and navigate more quickly. Real-time-

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capable implementation of the method is the next step. The project was funded by the German Federal Ministry for Economic Affairs and Energy (BMWi).

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Multi-channel ECG for mobile use

With the "CardioSHIRT", Fraunhofer IIS has developed a textile-integrated sensor solution for diagnostic electrocardiography (ECG). The CardioSHIRT helps to recognize changes in coronary vessels at an early stage and effectively prevent heart disease by recording ECGs through up to 9 measuring channels. To provide fast, reliable diagnostic support, it supplies medical measurement data, which is transmitted to a smartphone via Bluetooth. Possible applications include performance diagnostics, patient monitoring and sleep analysis. The technology was developed as part of the pilot phase of the Leistungszentrum Elektroniksysteme (LZE), sponsored by the Bavarian Ministry of Economic Affairs and Media, Energy and Technology.

Fraunhofer IIS at MEDICA from November 13–16, 2017

At the MEDICA 2017 trade fair from November 13 to 16, visitors can go to Hall 10, Booth G05 to learn all about the MCube and 3D panoramic endoscopy, and proceed to the Wearable Technologies Show in Hall 15, Booth A23 to explore the CardioSHIRT.



Modular platform for microscopy.

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The **Fraunhofer-Gesellschaft** is the leading organization for applied research in Europe. Its research activities are conducted by 69 institutes and research units at locations throughout Germany. The Fraunhofer-Gesellschaft employs a staff of 24,500, who work with an annual research budget totaling more than 2.1 billion euros.

The **Fraunhofer Institute for Integrated Circuits IIS** in Erlangen is one of the world's leading application-orientated research institutions for microelectronic and IT system solutions and services. It is the largest of all Fraunhofer Institutes. With the creation of mp3 and the co-development of AAC, Fraunhofer IIS has reached worldwide recognition. In close cooperation with partners and clients the Institute provides research and development services in the following areas: Audio and Multimedia, Imaging Systems, Energy Management, IC Design and Design Automation, Communication Systems, Positioning, Medical Technology, Sensor Systems, Safety and Security Technology, Supply Chain Management and Non-destructive Testing. More than 900 employees conduct research for industry, the service sector and public authorities. Founded in 1985 in Erlangen, Fraunhofer IIS now has 13 locations in 10 cities: Erlangen (headquarters), Nürnberg, Fürth and Dresden, as well as Bamberg, Weischenfeld, Coburg, Würzburg, Ilmenau and Deggendorf. The budget of 150 million euros a year is mainly financed by contract research projects. 24 percent of the budget is subsidized by federal and state funds.

Detailed information on: www.iis.fraunhofer.de/en