

SMART SENSORS WITH EMOTIONAL INTELLIGENCE IN PERSONALIZED APPLICATIONS

Cognitive sensor technology at Fraunhofer: your benefits and advantages

We offer you pioneering solutions from a single source.

Our innovations record relevant biosignals and facial expression analysis reliably without limiting the user in any way.

Our focus here is on ease of use and the simple integration of the systems as well as their robust implementation.

Our ultra-low power technologies are suitable for mobile, independent applications thanks to their low power consumption and low amount of effort required for maintenance. They react in milliseconds, enabling real-time applications in a variety of areas.

Our expertise in the control and capacitive analysis of gas sensors, the development of energy-efficient MEMS sensor ASICs for Smart Systems support you in the quick, cost-effective, and efficient implementation of requirements.

Contact us for further information.

We look forward to your call or email!

www.iis.fraunhofer.de/affective-sensing

Fraunhofer Institute for Integrated Circuits IIS

Management of the institute
Prof. Dr.-Ing. Albert Heuberger
(executive)
Dr.-Ing. Bernhard Grill

Am Wolfsmantel 33
91058 Erlangen, Germany

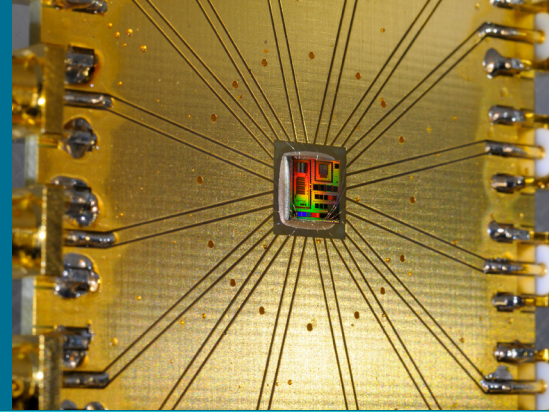
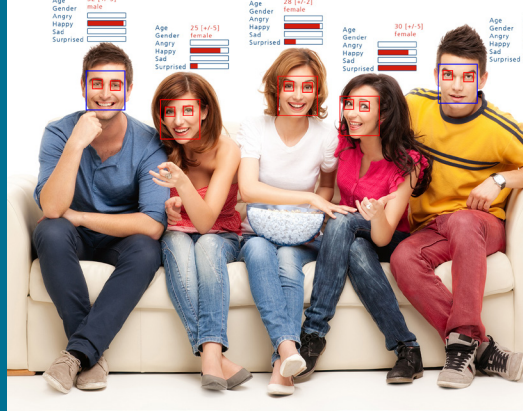
Contact
Dr. Nadine Lang
Phone: +49 9131 776-7351
nadine.lang@iis.fraunhofer.de

www.iis.fraunhofer.de

ADAPTIVE SYSTEMS FOR A BETTER DAILY LIVING ENVIRONMENT

AFFECTIVE SENSING: EMOTIONS IN CONTEXT





One of the core subjects in the area of Smart Sensing and Electronics is the machine recognition, interpretation, and processing of human emotions and affects. For many years we have been working on developing networked sensor solutions, emotion-adaptive technologies, and perception-based user interfaces. Our contribution to human-machine communication in this area is significant.

Our value proposition encompasses the following disciplines:

- Rapid prototyping and field testing
- Machine learning / deep learning
- Face and gesture analysis
- Biosignal processing
- Sensor data fusion
- (Medical) sensor technology
- IC and ASIC design

Health Care, patient monitoring and smart textiles for training/fitness/wellness

Textile-integrated recording of vital parameters and stress management:

The CardioTEXTIL, a mobile 9-channel ECG, recognizes changes in coronary vessels as early as possible and prevents heart diseases. The direct integration of the sensor technology is user-friendly, simplifies handling, and makes it comfortable to wear. The FitnessSHIRT features a one lead ECG, one channel respiration and 3 axes movement to be used for performance analysis and mHealth applications.

In combination with the ion-selective sweat sensor ELECSA®, a non-invasive alternative for measuring blood lactate, several new applications in medicine are possible.

Facial recognition software and low-complexity computer-vision for market research, cognitive robotics and health support

Image- and video-based solutions for real-time analyses of facial expressions and basic emotions:

The SHORE® software library is platform independent and suitable for use on mobile end user devices. It enables a robust

analysis of any number of people with regard to gender, age, and emotional state.

Because its implementation is extremely efficient, SHORE® can also be operated on intelligent sensor nodes and, for many big data applications, it can provide anonymized metadata, subject to data protection law.

Integrated sensor systems for miniaturized energy-efficient solutions

Based on integrated circuit technologies, we develop optical sensors and chemical sensor systems.

Typical applications for our chemical sensors are the detection of organic molecules with lowest concentrations in liquids with high selectivity and indoor/outdoor air quality measurements.

Our multispectral optical sensors can be used for robust, contactless detection of pulse rate and heart rate variability.