Fraunhofer
EMFT

Medical Wearables Platform

Monitoring and Evaluation of Vital Parameters for the Prophylaxis of Diseases

Medical wearable: Sensor bracelet for vital parameter measurement and health detection

Applications

Progressing technology makes patient-specific therapy and prophylaxis possible. To be able to assess people's current state of health on the basis of vital parameters, we have integrated both hardware and software into one platform. This allows to monitor blood oxygen saturation, heart rate, temperature and, particularly, blood pressure. The data enables an early detection of diseases and the monitoring of ongoing therapy. Body-worn multisensor systems for monitoring vital parameters must work reliably and deliver high-quality data. Machine Learning methods allow to detect features within multivariate data sets that give conclusions about the beginning of specific diseases and predict their further progression.

At Fraunhofer EMFT, prototypes for the following applications are realized:

- a sensor wristband for autonomous arterial blood pressure measurement
- a pressure ulcer prophylaxis device to identify wound occurrence before it becomes visible
- a sensor bracelet to monitor the health status of patients with infectious diseases

Technical Innovation

At Fraunhofer EMFT, we develop a Machine-Learning (ML) enhanced sensor system, which processes, evaluates and interprets the collected data and can provide a

Patient-specific Healthcare & Edge Analysis

diagnosis of a disease based on its analysis. To "train" this ML method, extensive and valid data from clinical studies on different diseases are used. In perspective, a meaningful diagnostic tool will be established this way.

Outlook

The long-term goal is to create an adaptable platform to perform prophylaxis monitoring and diagnosis of specific diseases. Therefore, further research is ongoing in the area of wearable battery-powered devices with various sensors for monitoring vital parameters. In parallel, research on edge data analysis is ongoing with the goal to generate medical information and alarms in critical conditions locally.

Reference to Funding Program

The research is supported by the German Federal Ministry of Health (BMG) within the project Kiprode (ZMVI1-2520DAT50A), that is coordinated by the DLR, the German centre for air- and space-travel, as project coordinator of the BMG in the field of health. In the Fraunhofer internal Programm "Fraunhofer versus Corona" a project "M3Infekt" was conducted. There the basics for the sensor bracelet were worked out.

KIPRODE project:
Mobile wound early detection device for prophylaxis of decubiti
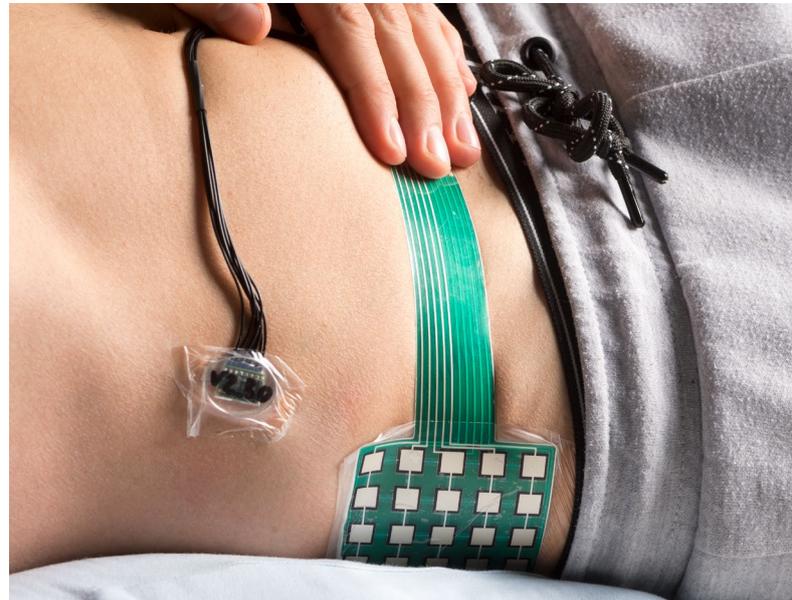
More Info

www.emft.fraunhofer.de/**medical-wearables**

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