Medical Wearables Platform

Monitoring and Evaluation of Vital Parameters for the Prophylaxis of Diseases

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, which allows monitoring of blood oxygen saturation, heart rate, temperature and particularly, blood pressure. The data enables early detection of diseases and 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

Patient-specific Healthcare & Edge Analysis
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 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, allowing for the development of a reliable diagnostic tool.

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 conducted with the goal to generate medical information and alarms in critical conditions locally.

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