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Wearable sensors for mobile health monitoring in daily life

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Wearable sensing devices have become very popular for consumer health and fitness monitoring in the private sector. It is quite obvious that a mass of people in need of daily care, rehabilitation interventions, or patients with chronic diseases can also benefit from being monitored by smart wearables. We have developed a wearable sensor platform that was and is successfully applied to 2 different e-health applications, i.e., home rehabilitation after stroke and control of asthma patients respectively asthma control. In the stroke rehabilitation setting, we have been able to assess the effectiveness of ambulant therapy by analyzing motor skills during daily life activities. The progress of rehabilitation state can be documented by statistics on the usage of upper limbs yet up to the point of comparing affected versus not-affected limbs. For smart asthma control, we developed prototypes of novel devices that collect insights of inhaler usages/medication in correlation to medication intakes, personal activities as well as environmental effects of the actual surroundings. Given that, about 50% of asthma patients are not well controlled, we expected boosting patient's self-management capabilities by automated feedback and guiding features for disease control on 24/7 basis. Likewise, we assumed a monitoring of inhaler use allows physicians for much better dosing medications to prevent from risky over- or underspending of medication intake. Promising measurement results of laboratory settings are currently transferred into real-world prototypes.

Biography

Steffen Ortmann holds a Diploma in Computer Science and a PhD in Engineering. Since 2005, he is active in the sensor network research group of IHP. He has published about 40 refereed technical articles on reliability, privacy and efficient data processing in wireless sensor networks and medical applications. His current research focuses on wearable wireless sensors for tele-medical innovations. He has coordinated the FP7 project StrokeBack.

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