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Life-Integrated Stress Assessment

by

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LIFE-INTEGRATED STRESS ASSESSMENT

Research paper

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Abstract

Stress is an individual, societal, and economical problem and the main cause of psychological and physiological illnesses. First efforts towards technological support of stress management and stress-adaptive IT systems use smartphone data to assess stress, enabled by the vast amount of data produced by smartphones' rich sensing capabilities. However, these systems require the user's active cooperation. We aim at life-integrated, continuous, smartphone-based stress assessment, which does not influence the user's daily habits. The proposed system uses hardware and software sensors to collect data on the user's behavior and environmental context. A prototype demonstrates the general feasibility of life-integrated mobile stress sensing and collects real-life evidence within a public field study, but also highlights that efficient resource consumption and privacy are even more important for unobtrusive applications. The evaluation of collected data yields a person-independent regression model that explains approximately 41 % of the variance in stress. A regression model built with the same data predicts perceived stress with an accuracy of 81 %. These results pave the way for the design of adaptive systems, which continuously sense the individual's mental state and execute regulating measures to better fit the user's needs.

Keywords: Mobile Sensing, Stress Assessment, Adaptive Systems, Personalized ICT.