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Using wearable sensors and music to build a stress intervention system

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Mental stress is an issue in the lives of many people. Statistics from the American Institute of Stress from 2014 state that 77% of people regularly experience physical symptoms of stress and 33% of people feel they are living with extreme stress in the United States. This is a large concern for the overall well-being of many because of the harmful effects of stress. Stress is recognized as a risk factor for serious illness, such as insomnia, eating disorders, depression, anxiety and panic attacks, circulatory problems, colds, and more illnesses. In order to offer a solution for

individuals to combat their stress before they must contact a healthcare professional, we are developing a stress intervention system. There is a quantitative relationship between an individual's stress level and their heart rate variability measurements. Applying this knowledge, our stress intervention system leverages an EKG sensor to detect changes in an individual's heart rate variability. To explore a methodology for detecting stress and lowering an individual's stress level, we offer corresponding music as a relaxation option.

Biography

Janet M Wang Roveda is a Professor in the Department of Electrical and Computer Engineering at the University of Arizona in Tucson. She received her M.S. and Ph.D. degrees in Electrical Engineering and Computer Sciences from the University of California, Berkeley in 1998 and 2000, respectively. She was a recipient of the NSF career award and the Presidential Early Achievement Award for Science and Engineering at White House in 2005 and 2006, respectively. She was the recipient of the 2008 R. Newton Graduate Research Award from the EDA community, the 2007 USS University of Arizona Outstanding Achievement Award, the 2016 Da Vinci Award, and the 2017 ACABI fellow for the Biomedical Engineering Advancement. She received the best paper award in journal of clean energy in 2013, ISQED 2010 as well as best paper nominations in ASPDAC 2010, ICCAD 2007, and ISQED 2005. Her primary research interests focus on robust VLSI circuit design, biomedical instrument design, Smart grid, VLSI circuit modeling/design and analysis, and low power multi-core system design. She has over 200 publications.

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