Human Sensing (Understanding Human Behavior from Sensors)

Fernando De la Torre
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CURRENT RESEARCH

How monitoring behaviors helps in improving medical diagnosis, evaluating treatment effects and early detection of some medical conditions

Dr. De la Torre sees a promising future for personal agents that improve medical diagnosis and assist in understanding treatment effects through behavioral analysis. Since coming to Carnegie Mellon University he has conducted research on behavioral systems that can diagnose and monitor different physical and mental conditions from a variety of sensors.

Dr. De la Torre leads two main lines of work:

1) Facial Image Analysis: The face is one of the most powerful channels of nonverbal communication. Facial expression provides cues about emotion, intention, alertness, pain, personality, regulates interpersonal behavior, and communicates psychiatric and biomedical status among other functions. The Human Sensing lab develops real-time automatic systems for facial expression analysis, facial recognition, facial feature tracking, and facial attributes. Applications include driver distraction detection, depression assessment from audio-video, pain analysis, video de-identification, and retail sentiment analysis.

2) Wearable sensing: The Human Sensing laboratory is interested in providing quantitative behavioral measurements of different psychical and medical conditions. Currently, they are working on continuously monitoring Parkinson's using wearable accelerometers, stress and fatigue using heart-rate monitors and galvanic skin response.

This sensor analysis is proving to help with diagnosing symptoms for the following health conditions:

Depression: One major limitation to the diagnosis and treatment of mental health disorders, such as depression, is the lack of objective measures to aid in the diagnosis and to assess the effects of therapy. Developing objective...

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AFFILIATION

Carnegie Mellon University

EDUCATION

- Bachelor in Electric Engineering and Computer Sciences 1994 ,La Salle School of Engineering
- M.S. in Electric Engineering and Computer Sciences 1996 ,La Salle School of Engineering
- M.S. in Computer Vision 1998,Universidad Autonoma Barcelona
- Ph.D. in Electrical Engineering 2002 ,La Salle School of Engineering

AWARDS

- Best Student Paper Award, 2012
- Coolest Faculty of the Year, 2008
- 50 Finest of Pittsburgh, 2008

RESEARCH AREAS

Life Science, Diagnostics, IOT, Devices, Data, Veteran's Causes

FUNDING REQUEST

This research has a promising future for personal agents that improve medical diagnosis and assist in understanding treatment effects through behavioral analysis. Your contributions will help fund students, postdocs, and Dr. De la Torre. Dr. De la Torre is interested in transferring the technology to society. He has licensed several of his technologies, and he has been involved with several spin-off companies.