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Imaging Stress

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Abstract

In this talk I will present a unique line of research that was pursued in the Computational Physiology Lab over the last several years. This research refocused the problem of physiological quantification of stress from measuring vital signs on the body using probe sensing to measuring local signs on the face using imaging. It also reconciled the ages-old controversy between observational psychologists and physiologists by naturally fusing the Facial Action Coding System with its physiological origins and correlates. Face is quintessential to communication and sensing. It features the most important sensory organs (e.g., eyes and nose) and heavy sympathetic innervations. Stress on the face manifests itself as sympathetically driven blood redistribution or perspiration activation to support heightened sensing and communication needs. Step by step this research revealed the full facial stress mechanism, its nuances, and its power. Novel psychological experimentation, physiological imaging, mathematical analysis and modeling, as well as pattern recognition integrated within a multi-disciplinary methodological approach are the pillars of the project. The success of this basic science research fuels a number of important applications from interrogation technology to the study and amelioration of occupational stress.

Speaker Bio-Sketch: Dr. Pavlidis is the Eckhard-Pfeiffer Professor of Computer Science and Director of the Computational Physiology Lab at the University of Houston. His research is funded by multiple federal agencies including the National Science Foundation and the Department of Defense, as well as corporate sources and medical institutions. He has written many journal articles and books on the topics of computational physiology and psychology as well as computer vision and pattern recognition. He is well-known for his work on stress quantification, which appeared in Nature and Lancet, and received world-wide scientific and media attention.