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2018 DISTINGUISHED UNIVERSITY PROFESSOR LECTURE

DR. DMITRY B. GOLDGOF

Healthcare in the Age of AI and Deep Learning: Automatic Assessment of Neonatal Pain

Tuesday, March 26, 2019
Patel Center for Global Solutions (CGS) - Room 136/138

About the Speaker: Department of Computer Science & Engineering, College of Engineering

Dmitry B. Goldgof is an educator and scientist working in the area of Medical Imaging, Image and Video Processing, Computer Vision and AI, Ethics and Bioengineering. His research interests are related to two broad thrusts. First is in the area of biomedical image analysis and machine learning with application in MR, CT, PET and microscopy images, radiomics and bioinformatics. Second area is in video motion analysis for biometrics, face analysis, surveillance and medical applications. Professor Goldgof has received his Ph.D. from the University of Illinois and M.S. from the Rensselaer Polytechnic Institute. Dr. Goldgof is currently Distinguished University Professor and Vice Chair in the Department of Computer Science and Engineering at the University of South Florida. Dr. Goldgof has graduated 29 Ph.D. and 45 MS students, published over 100 journal and 200 conference papers, 20 books chapters and edited 5 books (impact: over 11,000 citations, h-index 54). Professor Goldgof is a Fellow of IEEE, a Fellow of IAPR, a Fellow of AAAS and a Fellow of AIMBE.

About the Lecture: The advancement of artificial intelligence technologies has facilitated the development of applications that that can mimic cognitive functions and assess the emotions of humans. It has emerged a new paradigm for healthcare that focuses on monitoring human states for medical purposes. Throughout this talk, I will present an intelligent system that can be used to improve neonatal health care. In particular, I will present an application that monitors and assesses neonatal pain based on the analysis of different behavioral and psychological cues. The current pediatrics methods for assessing neonatal pain have several drawbacks that may lead to inappropriate treatment. Examples of these drawbacks include difficulties with objectivity, inconsistency, and discontinuity. The automatic monitoring of pain, using imaging, sound, and vital signs sensors, provides a continuous, consistent, and cost-effective assessment while reducing the caregivers' time-commitment. Our automatic application, which was developed using the state of the art methods in Computer Vision and Machine Learning, achieves up to 94% accuracy in assessing the pain of infants. After presenting the automatic system, I will discuss how such a system can benefit neonatal healthcare and improve patient outcomes. I will conclude by presenting future directions and possible extensions of such systems.

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Reception Begins at 3:00 PM
Lecture at 3:30 pm – 4:30 PM
Q & A from 4:30 PM – 4:50 PM