Ioannis A Kakadiaris, J Health Med Informat 2014, 5:3
http://dx.doi.org/10.4172/2157-7420.S1.004

OMICS Group Conferences
Accelerating Scientific Discovery

Health Informatics & Technology Conference
October 20-22, 2014 Double Tree by Hilton Baltimore - BWI Airport, USA

Cardiovascular informatics: How to stop a heart attack before it happens

Ioannis A Kakadiaris
University of Houston, USA

In this talk, author will present our research in biomedical image computing with emphasis on the mining of information from cardiovascular imaging data for the detection of persons with a high likelihood of developing a heart attack in the near future. Specifically, the author will present methods for detection and segmentation of anatomical structures, and shape- and motion-estimation of dynamic organs. In non-invasive cardiac CT data, the thoracic fat is detected using a relaxed version of the multi-class, multi-feature fuzzy connectedness method. Additionally, the calcified lesions in the coronary arteries are identified and quantified using a hierarchical supervised learning framework from the CT data. In non-invasive contrast-enhanced CT, the coronary arteries are detected using our tubular shape detection method for motion estimation and, possibly, for non-calcified lesion detection. In invasive IVUS imaging, our team has developed a unique IVUS acquisition protocol and novel signal/image analysis methods for the detection (for the first time *in vivo*) of 'vasa vasorum' (VV). The VV are micro-vessels that are commonly present to feed the walls of larger vessels. However, recent clinical evidence has uncovered their tendency to proliferate around areas of inflammation, including the inflammation associated with vulnerable plaques. In summary, our research is focused on developing innovative computational tools to mine quantitative parameters from imaging data for early detection of asymptomatic cardiovascular patients. The expected impact of our work stems from the fact that sudden heart attack remains the number one cause of death in the US, and unpredicted heart attacks account for the majority of the $280 billion burden of cardiovascular diseases.

Biography

Ioannis A Kakadiaris received his PhD from the University of Pennsylvania in 1997. Currently, he is a Hugh Roy and Lillie Cranz Cullen University Professor of Computer Science, Electrical & Computer Engineering, and Biomedical Engineering at the University of Houston. He is founder of the Computational Biomedicine Lab and co-founder of the Pumps and Pipes Conference. He is the recipient of a number of awards, including the NSF Early Career Development Award, Schlumberger Technical Foundation Award, UH Computer Science Research Excellence Award, UH Enron Teaching Excellence Award, and the James Muller Vulnerable Plaque Young Investigator Prize.

IKakadia@Central.UH.EDU