INVITED SPEAKER SEMINAR
IN ELECTRICAL AND COMPUTER ENGINEERING

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"Body Area Networks and Enabling Technologies for IoT-Health"

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ABSTRACT

Recent advances in miniature-sized microelectronics have created the opportunity to build ultra-small sensing & actuating devices that can be implanted inside or worn on the surface of the human body. Adding communication capability to such devices allows the possibility of performing more complex functions by connecting multiple devices to each other as well as the external IT infrastructure. This technology which can be used to continuously gather and process a variety of important health or physiological data is a critical component of the future IoT-Health systems. It enables a revolutionary set of applications such as smart pills for precision drug delivery, assistive medical micro-robots, vision restoration, brain-machine interface, Neuro-prosthetics, etc. The need for human subject involvement, energy limitation and interoperability issues are among the many challenges that these new technologies are facing. In this talk, an ICT perspective addressing some of these challenges along with a brief overview of relevant ongoing activities at the Information Technology Laboratory of NIST is provided.

BIOGRAPHY

Kamran Sayrafian is a Senior Scientist at the Information Technology Laboratory of the National Institute of Standards and Technology (NIST) located in Gaithersburg, Maryland. He is leading several strategic projects related to the application of ICT in Healthcare. Prior to this, he was the cofounder of Zagros Networks, Inc. a fabless semiconductor company based in Rockville, Maryland where he served as President and Senior member of the architecture team. Dr. Sayrafian is also an adjunct faculty of the University of Maryland since 2003, and an affiliate Associate Prof. of Concordia University in Montreal, Canada since 2016. His research interests include medical body area networks, mobile sensor networks and RF-based indoor positioning. He has published over 100 conference and journal papers, and book chapters in these areas. He was the recipient of the IEEE PIMRC 2009 & SENSORCOMM 2011 best paper awards. He has served as the Technical Program Committee and Executive co-chair of the IEEE PIMRC 2014 and organizer of several international IEEE conferences & workshops focused on the applications of wireless communication in healthcare. He is currently a member of the Editorial Boards of the IEEE Wireless Communication Magazine and international journal of wireless information networks. Dr. Sayrafian is the co-chair of the IoT-Health subgroup at the COST IC15104 "Inclusive Radio Communication Networks for 5G and beyond" action. He was a major contributor to the development of the IEEE802.15.6 international standard on body area networks; and, the recipient of the 2015 U.S. Department of Commerce Bronze Medal for his contribution to the field of body area networks. In 2014, he also served as the U.S. Embassy Science Fellow in Croatia. Dr. Sayrafian is the co-inventor/inventor of four U.S. patents; and, holds Ph.D., M.S. and B.S. degrees in Electrical & Computer Engineering from the University of Maryland, Villanova University and Sharif University of Technology, respectively.

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