"The Role of Engineering in Building the Next Generation of Smart Healthcare Systems"

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Reception in Olin 204 3:00 – 3:30 p.m.

Abstract: Today's modern healthcare delivery systems have been mainly designed to work with the onslaught of an illness, and logging of information into Electronic Health Record Systems (EHRs) related to symptoms, diagnosis, treatments, etc., is initiated with the illness. There is hardly any data collected during the wellness phase of a person. Furthermore, access to the data stored in such systems for the purpose of analyses involves complicated manual processes, and the related access policies make it extremely difficult to perform analytics. In this age of wireless sensors, advance networking, and data sciences, it is fitting to envision the design of an integrated cyber physical system that allows ubiquitous, but anonymized, collection of wellness and sickness data, and facilitates the development of models and analytics to predict wellnesses and illnesses trajectories.

Towards achieving this vision, we will present the role of engineering disciplines, particularly electrical and computer engineering, in building the next generation of smart healthcare systems. We will mainly focus on the aspects of data collection, analytics and management environment consisting of a set of intelligent sensor objects, with wireless communication capabilities, installed in clinics, hospital rooms, and mobile platforms, or embedded in human bodies (such as knee transplants or skin patches). We will elaborate on the challenges and research opportunities to realize such a system.

Ashfaq Khokhar, Ph.D. is currently serving as Professor and Palmer Department Chair of Electrical and Computer Engineering at Iowa State University. Previously, he served as chair of the Department of Electrical and Computer Engineering at Illinois Institute of Technology from 2013-2016. Before that, he was a Professor and Director of Graduate Studies in the Department of Electrical and Computer Engineering at the University of Illinois at Chicago. Khokhar was named an Institute of Electrical and Electronics Engineer (IEEE) Fellow in 2009. Khokhar's research centers on health care data mining, content-based multimedia modeling, retrieval and multimedia communication, high-performance algorithms, and context-aware wireless sensor networks. He earned his bachelor's degree in electrical engineering from the University of Engineering and Technology in Lahore, Pakistan in 1985; his master's degree in computer engineering from Syracuse University in 1988; and his Ph.D. in computer engineering from the University of Southern California in 1993.