

When: Friday 13:50 – 14:50

Where: ETB 1035

Speaker: Prof. Roozbeh Jafari

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Title: Wearable Computers on the Edge of the Cloud

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Abstract: As wearable computers gain traction in the consumer market, the bold vision of unobtrusive, pervasive and continuous physiological and behavioral monitoring is taking hold in everyday life. These platforms provide new avenues to continuously monitor individuals, whether they are intended to detect an early onset of a disease, assess human performance or enhance user's productivity. In the past few years, the community has observed a large number of applications that have been developed using wearable computers. There are, however, a number of fundamental challenges that need to be addressed before realizing the true ubiquitous use of the wearable systems for health, wellness and consumer applications.

The robustness of sensing plays a key role. Precision sensing, human factors and wearability are among other principal design requirements. Precision applications will require measurements that exhibit certain degrees of robustness to trigger actions. Human factors will play an important part promoting user compliance. Asking users to wearable plurality of sensors often lead to additional burden and will discourage the use. Exploring new sensing modalities that would conform to wearability and satisfy user's convenience will also remain of paramount importance.

In this talk, we will discuss a number of sensing and signal processing paradigms that capture physiological and behavioral observations including bio-impedance, optical and motion sensing modalities. Our primary focus remains capturing signals from a wrist-worn device with a watch form factor with high degrees of precision. We will present our experimental results and validation studies on several cohorts of human subjects for various applications and will offer concluding remarks on the trends of wearable computing technology development and potential future directions for consumer electronics.

Biography: Roozbeh Jafari (<http://jafari.tamu.edu>) is an associate professor in Biomedical Engineering, Computer Science and Engineering and Electrical and Computer Engineering at Texas A&M University. He received his PhD in Computer Science from UCLA and completed a postdoctoral fellowship at UC-Berkeley. His research interest lies in the area of wearable computer design and signal processing. His research has been funded by the NSF, NIH, DoD (TATRC), AFRL, AFOSR, DARPA, SRC and industry (Texas Instruments, Tektronix, Samsung & Telecom Italia). He has published over 150 papers in refereed journals and conferences. He has served as the general chair and technical program committee chair for several flagship conferences in the area of Wearable Computers including. He is the recipient of the NSF CAREER award in 2012, IEEE Real-Time & Embedded Technology & Applications Symposium (RTAS) best paper award in 2011 and Andrew P. Sage best transactions paper award from IEEE Systems, Man and Cybernetics Society in 2014. He is an associate editor for the IEEE Transactions on Biomedical Circuits and Systems, IEEE Sensors Journal, IEEE Internet of Things Journal and IEEE Journal of Biomedical and Health Informatics. He serves on scientific panels for funding agencies frequently and is presently serving as a standing member of the NIH Biomedical Computing and Health Informatics study section.