

SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
COLLEGE OF DESIGN AND ENGINEERING

Website: <https://cde.nus.edu.sg/ece>

Area: Microwave & Radio Frequency

Host: Dr John S. Ho

TOPIC	:	Wirelessly Powered Sensor Network for High Data Rate, Continuous Health Monitoring
SPEAKER	:	Mr Selman A. Kurt Graduate Student, ECE Dept, NUS
DATE	:	Tuesday, 26 April 2022
TIME	:	10.00AM to 11.00AM
WEBINAR	:	Join Zoom Meeting https://nus-sg.zoom.us/j/84777637983?pwd=NGxvNFN1djVCR3I3TU5sdFI4L1RCQT09 Meeting ID: 847 7763 7983 Passcode: 789585

ABSTRACT

Wearable sensor networks can be used to collect multimodal physiological signals and monitor health metrics across the human body. Most existing examples of such networks, however, require each sensor to be individually powered by a battery and interconnected through wireless communication. Recent work has demonstrated electronic textiles that can facilitate near-field wireless transfer of power and data across the body and form a network of battery-free sensors. However, the data rates were constrained by the low operating frequency, which limits the transmission of high-bandwidth physiological signals. In this talk, I will introduce an electronic textile that supports both near-field wireless power (13.56 MHz) and Bluetooth wireless communication (2.45 GHz). We demonstrate that this passive structure enables -23 dB power transfer efficiency for 30 cm long electronic textile and enhances communication efficiency by more than two orders of magnitude compared to no electronic textile case. We also show that the electronic textile can be used to wirelessly interconnect a battery-free pulse oximeter with a smartphone at both frequencies.

BIOGRAPHY

Mr Selman A. Kurt is currently a PhD student in Department of Electrical and Computer Engineering NUS, supervised by Assis. Prof. John S. Ho and Assoc. Prof. Jerald Yoo. His current research interest focuses on wearable and implantable wireless sensors for healthcare applications.

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