Announcing the Final Examination of Sina Moradian for the degree of Master of Science

Time & Location: April 7, 2017 at 3:00 PM in HEC 440
Title: Wearable Passive Wireless MEMS Respiration Sensor

In this study a sensor that wirelessly records the breathing profile of the human respiratory system is presented. The sensor works passively and does not contain a power source. Furthermore, it is lightweight, robust and flexible making it ideal as a wearable monitoring device. The sensor is made of a \( \sim 902 \text{MHz} \) thin film piezoelectric-on-substrate (TPoS) MEMS resonator and an ultra-high frequency (UHF) antenna made of a thin metal film formed on a flexible substrate. The resonance frequency of the TPoS resonator shifts in response to inspiration and expiration and a wireless detection technique is utilized to sense the frequency shift and translate it into the respiration profile. The Respiration profile of a subject is measured and presented for a sensor-to-transceiver distance of \( \sim 25 \text{cm} \).

Major: Electrical Engineering

Educational Career:
Bachelor's of Electrical Engineering, BS, 2013, Iran University of Science and Technology

Committee in Charge:
Reza Abdolvand, Chair, Electrical & Computer Engineering
Kalpathy Sundaram, Electrical & Computer Engineering
Vikram Kapoor, Electrical & Computer Engineering

Approved for distribution by Reza Abdolvand, Committee Chair, on March 22, 2017.

The public is welcome to attend.