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**IEEE Signal Processing WA Chapter**

**Seminar Notice**

**Title: Wearable Stretchable Sensors for Remote Health Monitoring**

**Presenter:** Dr Jumana Abu-Khalaf

**Time:** 16:00-17:00

**Date:** Wed 22 Jul 2020

**Venue:** Zoom (Link will be provided after RSVP)

**Cost:** Free to all IEEE members as well as non-members

**RSVP:** Douglas Chai (email: douglas.chai@ieee.org)

**Abstract:**

Remote monitoring of human physiological parameters is becoming a necessity due to the increased life expectancy in most countries. This is expected to burden the current medical and social welfare systems financially, which will result in reduced quality in the provided health care. Hence, it is desired to develop cost-effective and easy-to-use technological solutions that allow for monitoring elderly patients, as well as immobile patients, in their homes. Using non-invasive wearable sensors allows for the remote monitoring of vital signs such as heart rate, respiratory rate, body temperature, and blood pressure in real time. These parameters could be used to make initial diagnoses of the physical condition of the patient and alarm medical professionals in the case of an emergency. Existing remote sensing solutions are expensive and bulky making them uncomfortable to be worn, especially by the elderly. Hence, innovative solutions are required to develop cost-effective wearable sensors that allow for remote health monitoring without hindering the natural activity of the patient.

This talk presents an overview of novel techniques used to fabricate and characterize stretchable and wearable sensors. An important focus is on printed stretchable circuits that fully conform to the two-dimensional curvature of the human body. Additionally, solutions which are required to enhance stretchability while maintaining electrical conductivity and interface the sensor with external circuitry for purposes of power transmission and wireless signal acquisition, are discussed.

**About the Speaker:**

Jumana Abu-Khalaf received her Ph.D. in Mechanical Engineering from the University of Utah, USA, in the area of Robotics and Control. Her research was on the optimization of wearable stretchable sensors for fingertip force direction estimation. The purpose was to further investigate human grasping and manipulation. Prior to joining Edith Cowan University, Jumana was an Associate Professor in Mechatronics Engineering at the German Jordanian University, Jordan. She was the co-director of the Robotics Laboratory and a research faculty member at the Nano Laboratory. In these roles she conducted research in the area of bio-robotics with projects in bio-instrumentation and bio-inspiration. She is currently a Vice Chancellor’s Research Fellow in Computing and Security at the School of Science. Building on her background and expertise, she is researching artificial intelligence and machine learning techniques for autonomous navigation of unmanned ground vehicles in natural environments.