Speaker Information:

Name: Dr. Rosmina Jaafar

Speaker background info:

Dr. Rosmina Jaafar is senior lecturer at Dept. Electrical, Electronics & Systems Engineering, Faculty of Engineering and Built Environment, Universiti Kebangsaan Malaysia (UKM). She has attained Ph.D in Electrical, Electronics & Systems Engineering from UKM in 2009, M.Sc in Electronics (Medical Systems) from University of Hertfordshire (UK) in 2000 and B.Sc. in Biomedical Engineering from Case Western Reserve University (USA) in 1991. Having exposed to almost 30 years of biomedical engineering from the college life, her passion towards research activities in biomedical engineering grew and expanded over the years. Her research work revolves around developing healthcare technologies that include biomedical signal processing, imaging, informatics and medical electronics instrumentation. To name a few most common biomedical signal processing that she encountered in her research activities include dealing with signals from the heart, the electrocardiogram (ECG); signals from the blood volumetric pulse, the pulsephotoplethysmogram (PPG); signals from the muscles, the electromyogram (EMG); and signals from the brain tissues, the electroencephalogram (EEG). Today she will share some fundamental knowledge on EEG signals.

Topic of Presentation:

The electroencephalogram (EEG) principles, instrumentation, signal processing and application examples

Abstract:

The brain is composed of the nervous tissues that generate electrical potentials. The electrical signals within the brain can be recorded on the scalp near the surface of the brain as electroencephalogram (EEG). The EEG waveforms are dynamic signals containing abundant information regarding ones' functional brain activities and often used in the medical applications to diagnose conditions such as seizures, epilepsy, head injuries, dizziness, headaches, brain tumours, sleeping problems and to confirm brain death. Because EEG holds plentiful hidden information and by nature it is complex waveforms due to the complexity of the brain itself, before exploiting the signals one need to acquire fundamental knowledge on EEG. As such, this session of the webinar will discuss on fundamentals of the EEG, the instrumentation for EEG data acquisition, basics of EEG signal processing and sharing of a few research applications utilizing EEG signals. Hoping that the session will provide the audience the key knowledge on EEG fundamentals.