Biological Applications of Signal Processing

ABSTRACT:
Dinesh will expose the audience to a range of biological applications of signal processing, such as given below:

- Modeling and analyzing myoelectric signals to perform source separation and identify hand gestures to assist the infirm, the elderly and the disabled to control devices such as the prosthetic hand.
- Techniques to identify changes in the retinal image to determine risk factors for stroke and early symptoms of diabetes.
- Improved estimation of fractal dimension of the image and to reduce the impact of shadow and other artifacts on the outcome of the analysis.
- Measuring the source independence and the estimation of source numbers in a given mixture. This method has applications ranging from speaker recognition (biometrics) to analysis of EEG and EMG.
- The limitations of iterative classification techniques for biological and biometrics applications because of unbalanced training and testing data and discussing an alternate set of techniques to classify the signal using twin hyperplanes.
- Dynamic feature selection for biometrics applications. Why PCA or similar feature reduction method is not suitable for biometrics and biomedical applications and what is dynamic feature selection.

SPEAKER:
Dinesh K Kumar is the leader of Biosignals at RMIT University. He has published over 280 papers, in high impact journals such as Neurology, Neurobiology and number of IEEE journals. He is on the editorial team of IEEE Transactions of Neural Systems and Rehabilitation Engineering (TNSRE) and Journal of Biological and Medical Engineering. He is also the founder and chair of IEEE Biosignals and Biorobotics (BRC) conference, and is a consultant to number of start-up companies in this space. He has generated 7 patents.

Note: Engineers Australia members are eligible to claim CPD for attending this event.