Biomedical Signal Analysis

Course proposed by Young K. Truong

Introduction to the electrocardiogram, electroencephalogram, electromyogram, and other diagnostic signals. Computer techniques for processing and analysis of biomedical signals. Pattern classification and decision techniques for computer-aided diagnosis. Case studies from current applications and research.

Topics to be covered:

1. Basic concepts of signals, systems and digital filters
2. Characteristics of biomedical signals: stationarity, periodicity, rhythm, wavelet, epoch, episode, and transient
3. Basic signal processing techniques for filtering, denoising, cancellation of interference, characterization of signals
4. Design and implement techniques for the detection of events such as the QRS complex, heart sounds and murmurs and the dicrotic notch
5. Explore techniques for the analysis of wave shape and waveform complexity
7. Pattern classification and decision techniques for computer-aided diagnostics
8. Design, develop, implement and analyze computer methods for the analysis of biomedical signals in team project

Textbooks/Recommended Books