Biomedical Signal Analysis

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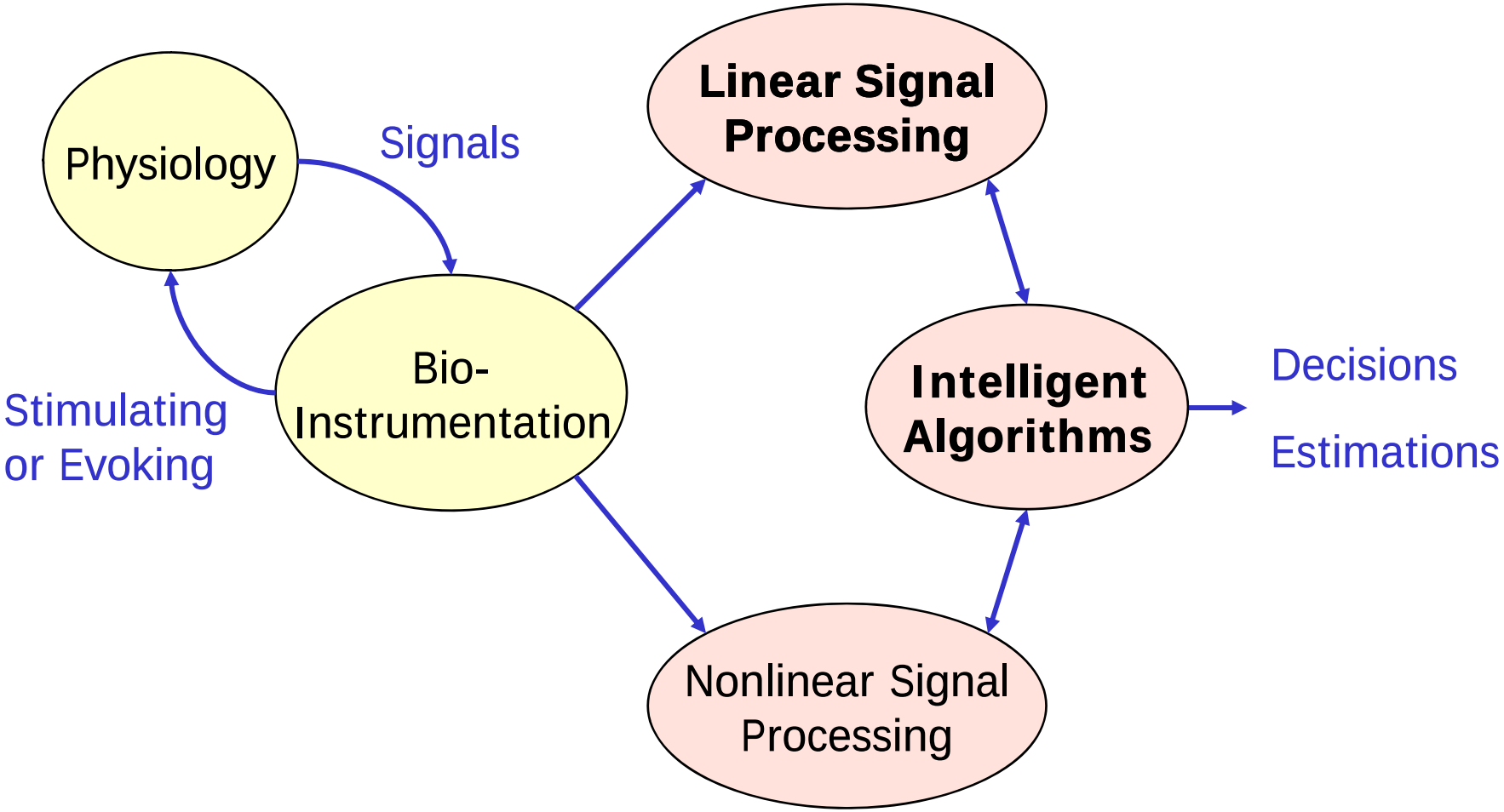
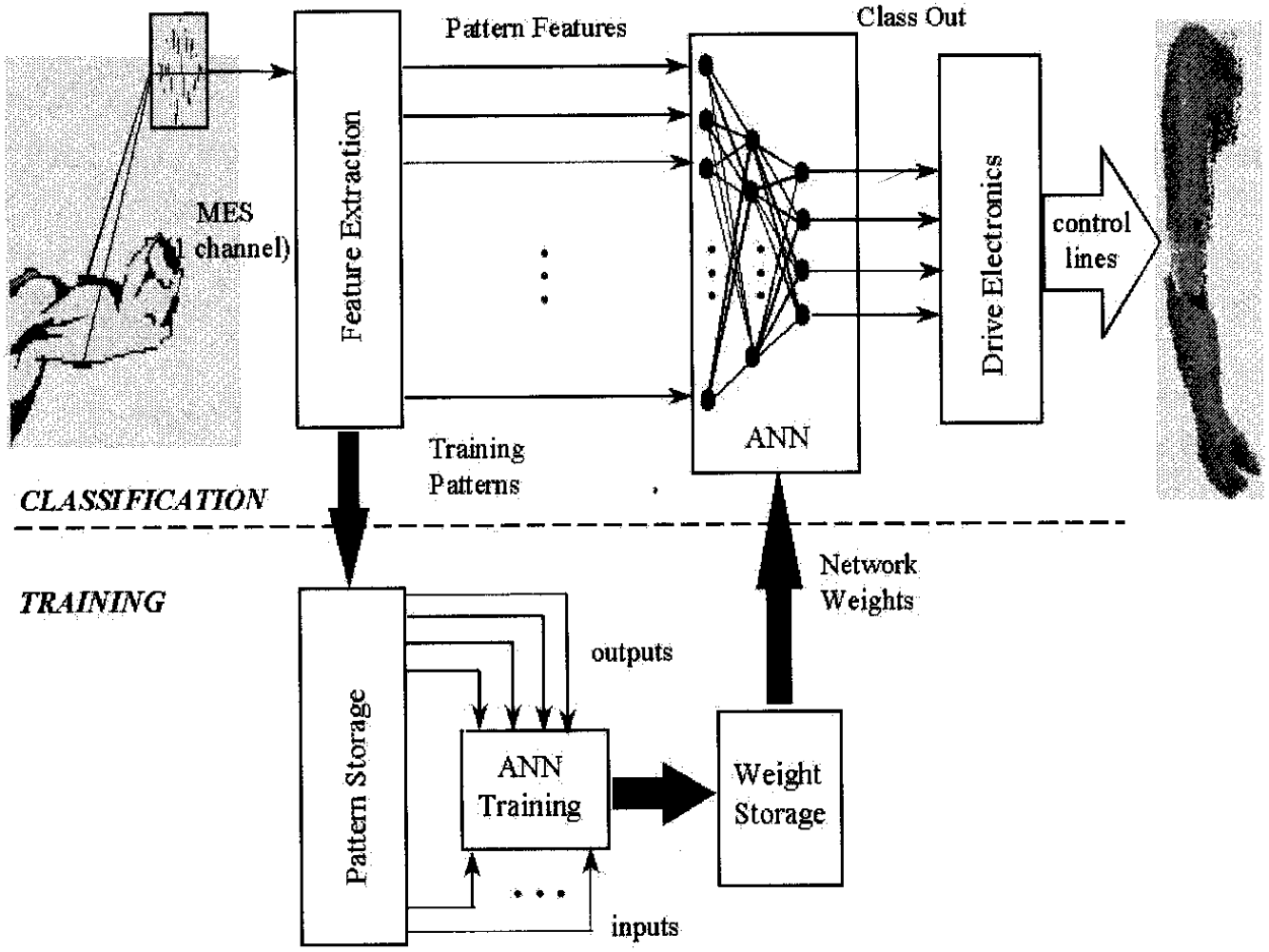
Major topics

1. Sampling theorem
3. Spectral analysis
3. Filter design and applications
4. Electrocardiography
5. Neurophysiology signal analysis
6. Electromyography signal analysis
7. Feature extraction
8. Pattern recognition

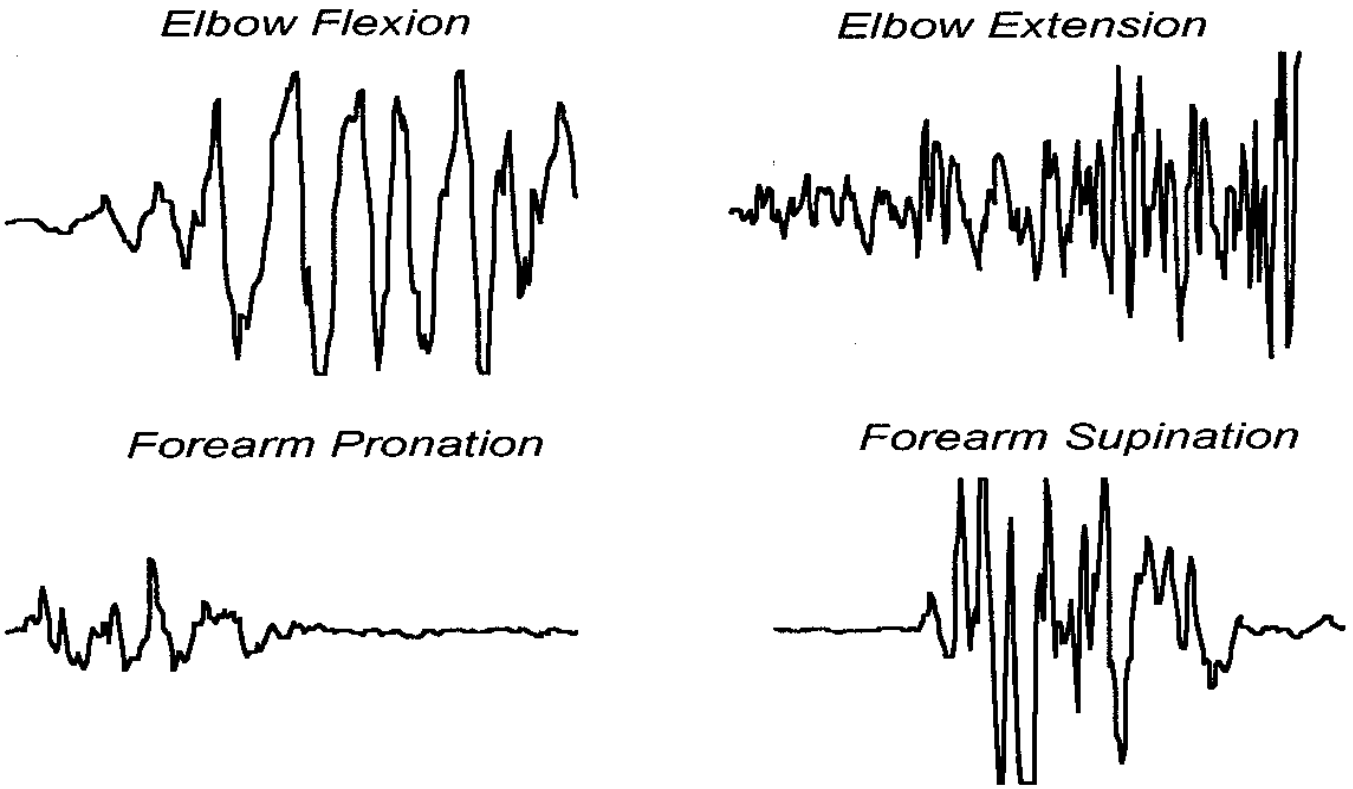

Physiology
Signals
Linear Signal Processing
Bio-Instrumentation
Stimulating or Evoking
Intelligent Algorithms
Decisions
Estimations
Nonlinear Signal Processing

Electromyography (EMG) Processing in Prothesis Control

(Myoelectric Control System at University of New Brunswick, Canada)



EMG during different movements



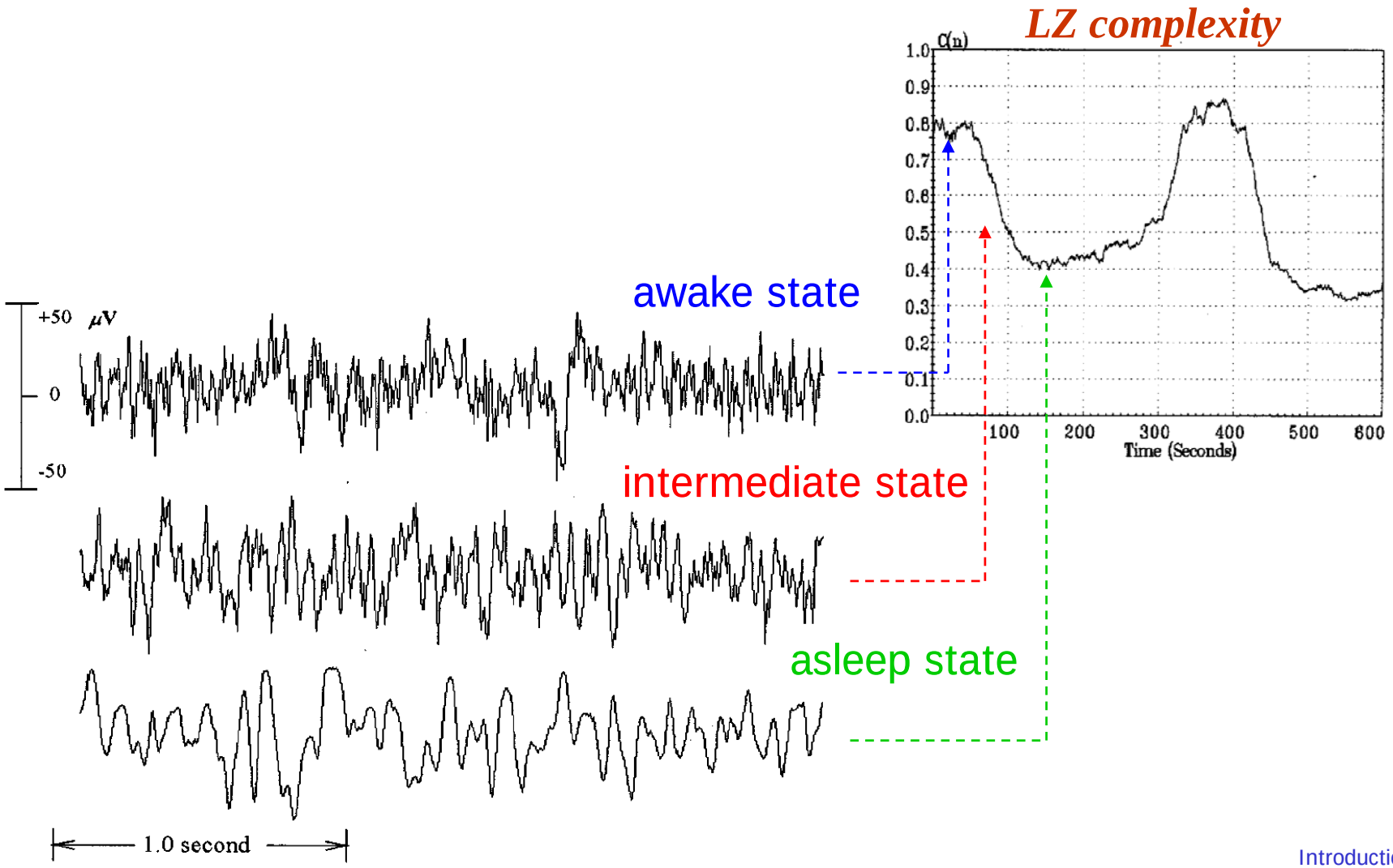
Estimation of depth of anesthesia by EEG/AEP

EEG monitoring

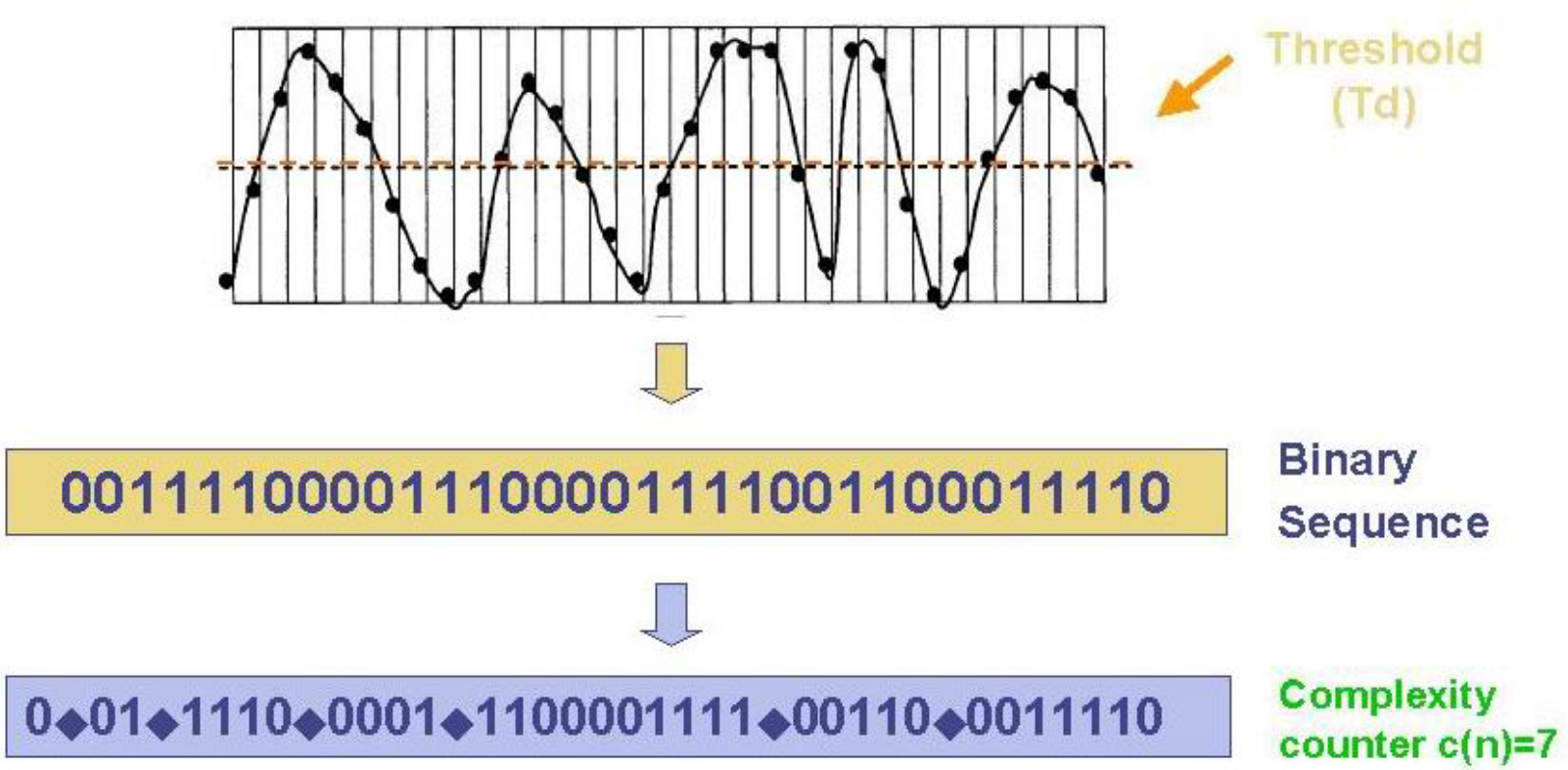
Audio evoked potential monitoring

http://www.danmeter.dk/

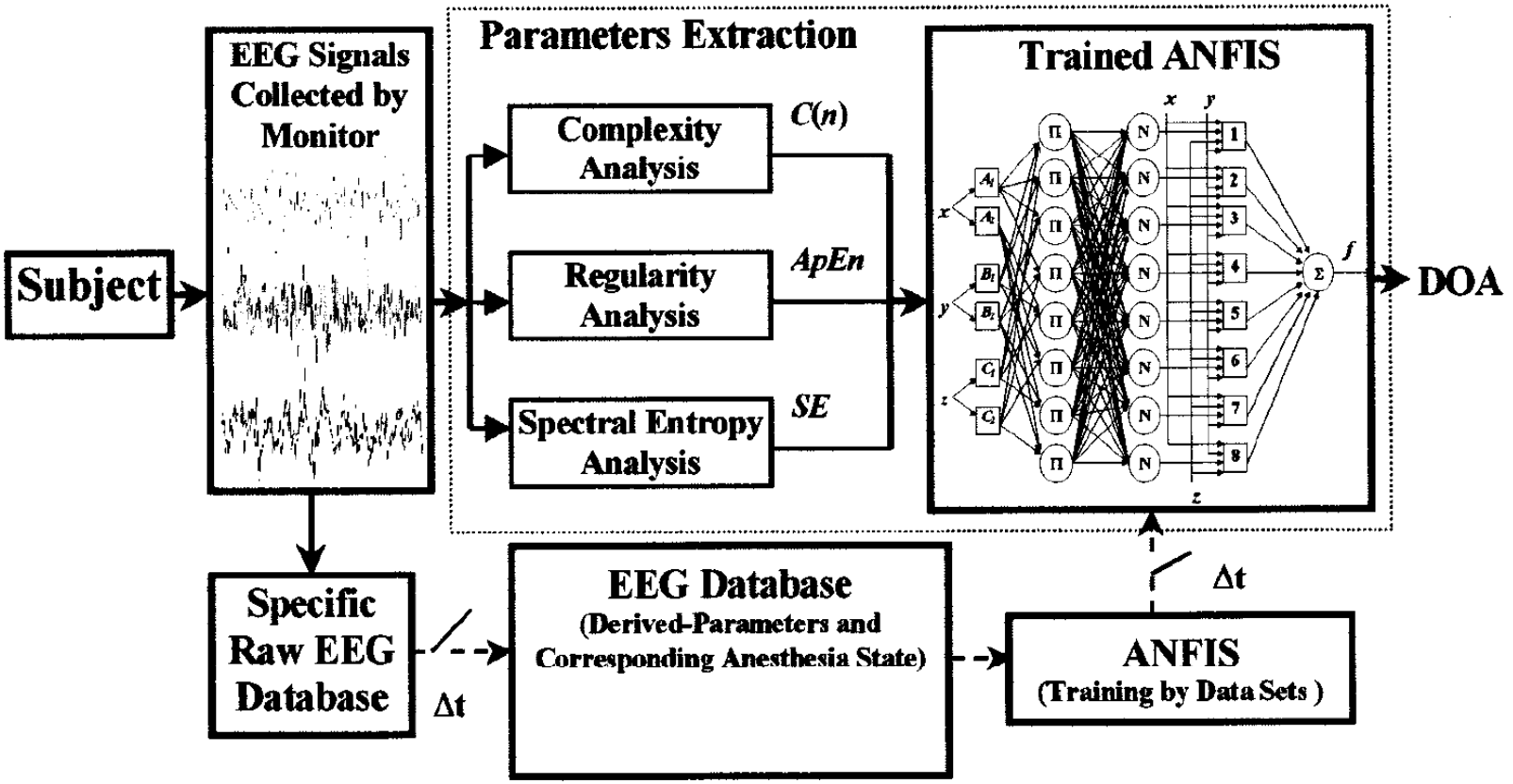
EEG waveform recorded from one patient under sevoflurane in different states



Lempel-Ziv complexity



Estimating the Depth of Anesthesia Based on Neuro-Fuzzy Model (XS Zhang, IEEE Trans. BME,2001)



Textbook & Reference

- 張智星 MATLAB程式設計與應用 清蔚科技
- R. Rangayyan, “Biomedical Signal Analysis”, John Wiely & Sons, 2002.
- WJ. Tompkins, “Biomedical Digital Signal Processing”, Prentice-Hall, 1993.