

Patient Specific Framework for Biomedical Signal Management

Serkan Kiranyaz¹, Moncef Gabbouj¹, and Morteza Zabihi¹
Tampere University of Technology¹

NEED & INDUSTRIAL RELEVANCE

- Personalized healthcare services
- Health monitoring in daily life
 - Elderly, athletes, casual trainees
- Human Machine Interface
 - Rehabilitation, motor assistance, biofeedback
- Medical Environments
 - Operating rooms, epilepsy monitoring units

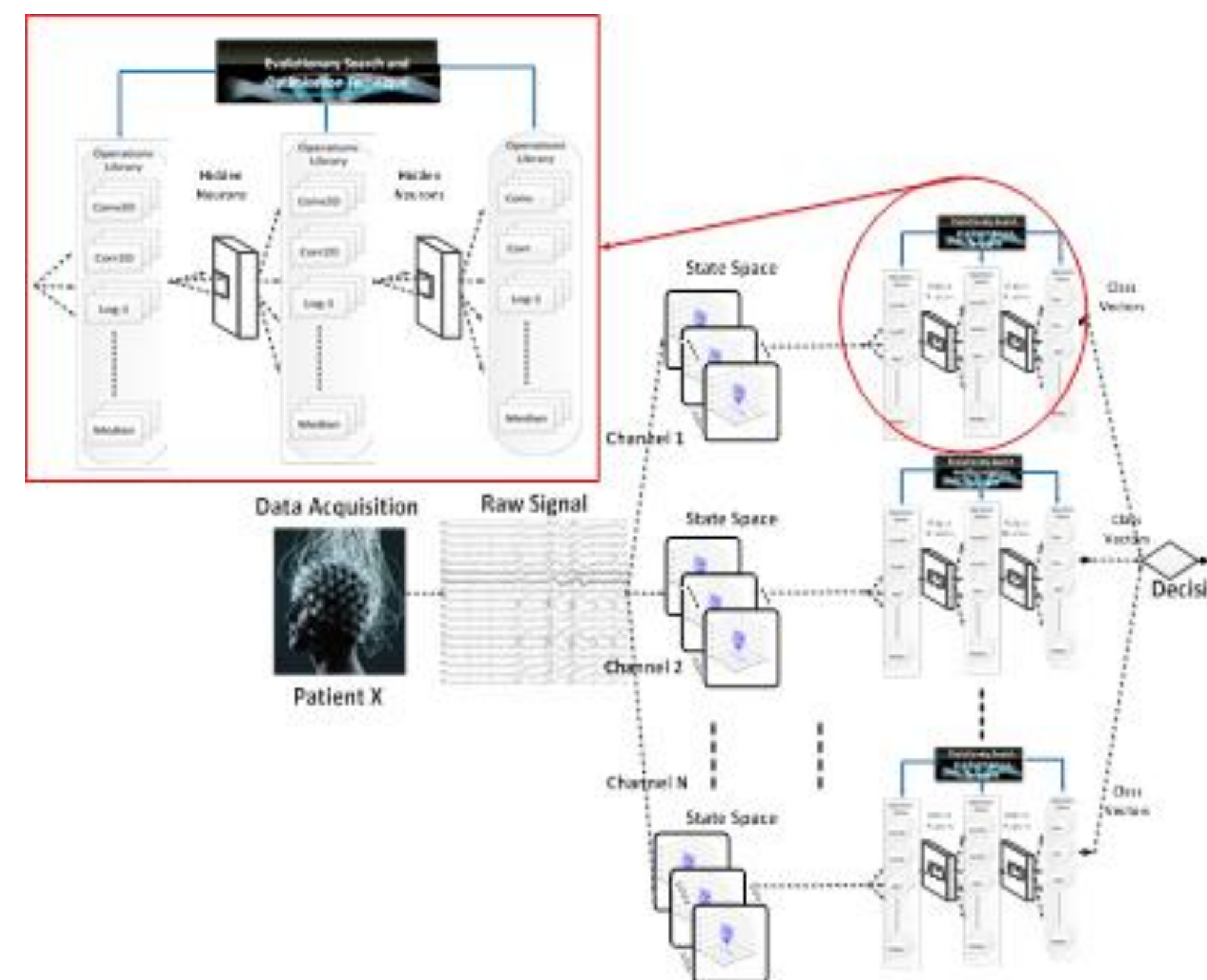
PROJECT GOALS

- Develop domain dependent pre – processing tools to improve data quality
 - Unified representation of data
- Aspect based sentiment analysis
 - Aspect identification
 - Feedback and opinion extraction
 - Summary generation

OBJECTIVES

- The main innovation will be to “learn” and “mimic” the human medical expert’s ability to detect and visualize anomalies in a patient’s possibly large biomedical data using novel approaches in
- Nonlinear dynamics
- Large-scale machine learning

APPROACH (RESEARCH METHODS)



OUTCOME / DELIVERABLES

- Methods and algorithms
- Prototype system for
 - Automatic health monitoring of elderly, athletes
 - Man machine interface
 - generation of automatic health report with ranked suggestions
- A web service to demo the prototype system

IMPACT

- Long-term recordings, physiological and non-physiological noise, and unbalanced classes pose a serious threat to the efficiency of biomedical signal analysis. Therefore, our method will:
- “Learn” and “Mimic” the human medical expert’s ability
- Outperform the state-of-the-art methods