BSc/MSc Project

Title: Multimodal physiological time-series analysis for outcome prediction in the intensive care unit (ICU)

Project Description

Background: The most critically ill patients in our health care system are treated in the intensive care unit (ICU). Here, monitoring devises gather a wide range of physiological information every second, which together with clinical, administrative and laboratory information makes the ICU the most data intensive ward at any hospital. This data serves to guide the ICU professionals in decision making, however the high volume of data makes it difficult to comprehend and transform into decisions that fully reflect the depth of information present.

Aim: The patient complexity and disease severity together with the massive amount of data represent an opportunity to use Machine Learning techniques to develop data-driven tools for disease prognosis and electronic decision support.

Method: The current project will focus on the application of advanced signal processing techniques for analyzing the multimodal physiological time-series from approximately 3500 patients admitted to the Capital Region ICU between 2009 and 2016. Based on the extracted features, a dynamic (neural network) model will be built   for outcome prediction and the predictive potential of each feature will be evaluated.

Prerequisites: Knowledge in signal processing, programming skills and experience with MATLAB

Responsible institutions: The project will take place as a collaborative effort between the master student and the research environments at Novo Nordisk Center for Protein Research (KU) and the Department of Electrical Engineering (DTU).

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Allowed no of students per project: 1-2

The project description may be published on the website (yes/no): Yes

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