The Lorry I. Lokey Interdisciplinary Center for Life Sciences and Engineering
NETWORK BIOLOGY RESEARCH LABORATORIES

TECHNION Department of Electrical Engineering

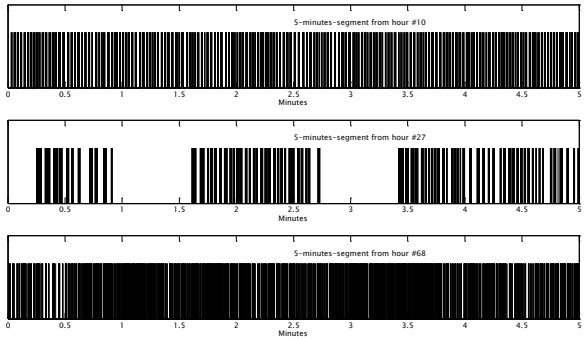
Extracting causal dynamic models from neural spike trains

Project Description

Neurons in the cortex code and compute as part of a locally interconnected population. Usually, access to neuronal dynamics is only available through indirect sparse sampling. In order to gain an understanding of the underlying neuronal dynamics, the project will build a statistical data-driven model which will be used in order to predict salient network events. Such a model can also be used in order to study the underlying structure of the network. If successful, an attempt will be made to construct a control scheme to control the network, in a way which can later be tested in an experimental system. The statistical approaches used will be based on various extensions of techniques which have been widely used in Signal Processing such as the Hidden Markov algorithm.

Requirements:

- Random Signals course
- Project for excellent students only



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