Title (tentative): Approximated entropy & dynamical states

Thesis advisor(s): Massobrio Paolo, Luca Mesin

E-mail: Paolo.Massobrio@unige.it

Address: Via All'Opera Pia, 13 - 16145 Genova

Phone: (+39) 010353 - 2761

**Description**

**Motivation and application domain**

The spontaneous activity of cortical networks is characterized by the emergence of different dynamic states.

**General objectives and main activities**

The aim of this thesis is to use information theory methods (namely a recently developed version of approximated entropy) to characterize different network dynamics characterized by a mixture of bursting and spiking activity. Goal of this work is to apply and adapt a new algorithm to evaluate the level of entropy of the network (approximated entropy) developed at Politecnico di Torino to classify the different network dynamics and compare with the results achieved by means of the Self-Organized Criticality (SOC).

**Training Objectives (technical/analytical tools, experimental methodologies)**

Within this thesis, the master student will analyze experimental recordings by using data analysis algorithms developed in the group led by Luca Mesin of Politecnico di Torino.

**Place(s) where the thesis work will be carried out:** Politecnico di Torino (Italy)

**Additional information**

Pre-requisite abilities/skills: Computational Neuroscience, Neuroengineering

Curriculum: Bioengineering

Maximum number of students: 1

Financial support/scholarship: -