UNIVERSITY OF GENOA
DEPARTMENT OF INFORMATICS, BIOENGINEERING, ROBOTICS AND SYSTEMS ENGINEERING
MASTER'S PROGRAM IN BIOENGINEERING

Thesis Project Form

Title (tentative): Investigation of olfactory bulb to uncover layer-specific firing patterns and their dynamical features

Thesis advisor(s): Chiappalone Michela, Hayder Amin (DZNE, Dresden, Germany)

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Description

Motivation and application domain

The main goal of the thesis work consists of performing network-wide investigations of the olfactory bulb interconnected layers to uncover layer-specific firing patterns and their dynamical features.

General objectives and main activities

The student will use the cutting-edge neural recording technology of DZNE center to implement a biomimetic sensor of the olfactory system, incorporating olfactory receptor neurons and bulbs seeded on high density chips. The student will then use various odor stimulants to investigate the firing features of neuronal networks and their computational dynamics. The student will participate in regular journal club scientific presentations and lab meetings.

Training Objectives (technical/analytical tools, experimental methodologies)

The student will gain skills in olfactory bulb electrophysiology, top-notch microelectrode technology and computational tools for analysis. Moreover, using the DZNE custom-built analytical tools, the student will be trained to detect, process and interpret large-neuronal data.

Place(s) where the thesis work will be carried out: German Center for Neurodegenerative Diseases (DZNE), Dresden, Germany

Additional information

Pre-requisite abilities/skills: MATLAB programming skills, signal processing, statistics, attitude to experimental work

Maximum number of students: 1

Financial support/scholarship: Erasmus grant