

GIACOMO FANTONI

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An energetic and highly motivated professional with a strong commitment to achieving objectives in a timely manner while maintaining a focus on excellence. I have a keen interest in Computational Biology, specifically within the realm of Computational Neuroscience. I offer a proactive and disciplined approach to problem-solving, coupled with exceptional communication and leadership abilities gained through various group projects during both Master's and Bachelor's studies. Additionally, I am eager to broaden my skill set by acquiring experimental laboratory work skills, as I believe a comprehensive understanding of both computational and experimental techniques will enhance my ability to analyze neuronal data and make significant contributions in the field.

EDUCATION

Università degli studi di Trento

Master of Quantitative and Computational Biology

Trento, Italy

Sept. 2021 - Present

- Relevant coursework: Bioinformatics, Data mining, Mathematical Modeling, Computational Biophysics, Function and plasticity of the Central Nervous System.

Università degli studi di Trento

Bachelor of Computer Science

Trento, Italy

Sept. 2018 - Sept. 2021

BA Thesis: "Analysis of transcriptomic RNA-seq data from polysomal and total fraction from an epithelial cancer cellular line". Supervisor: Prof. A. Inga. Final grade 108/110.

EXPERIENCE

Università degli studi di Trento, Department of CIBIO

Analysis of transcriptomic RNA-seq data

March 2021 - August 2021

github.com/giacThePhantom/Tesi

Trento, Italy

- Implemented a pipeline to process RNA-seq data on a remote server.
- Analysed processed data using both R and python to gain biological insights regarding their involvement in cancer.

Università degli studi di Trento, Department of CIMEC

Computational modelling and simulation of the antennal lobe of the Honey Bee to uncover neuronal correlates of sleep

March 2023 - Present

github.com/giacThePhantom/genn-network-model

Rovereto, Italy

- Implemented a gpu-accelerated computational model of the antennal lobe in python.
- Implemented a machine learning pipeline to analyse the data produced by the model.

PROJECTS

Personal coursework collection Wrote in L^AT_EX all the material regarding the content of my university courses, making it accessible at github.com/giacThePhantom. This has provided easily accessible quality material for my colleagues and it has encouraged some people to join this project, creating a small community of maintainers.

Implementation of the Morris-Lecar neuron model A group project dealing with neuron dynamics implemented in Matlab. The code models the dynamics of a neuron using an hybrid stochastic model in which the membrane potential evolves according to a deterministic differential equation and the opening and closing of ion channels are modelled as a stochastic process. Source code is available at: github.com/giacThePhantom/mathematical-modeling-and-simulation-project.

Reimplementation of the tool "Current based decomposition – CURBD" Re-implemented [CURBD](#), a Python tool that trains a spiking recurrent neural network capable of reproducing experimental neural data. This reimplementation offers a more flexible, modular, and explainable codebases. It enables the tool to leverage inferred functional interactions to from the trained models to uncover directional currents between multiple brain regions. The code can be accessed at github.com/giacThePhantom/CURBD.

SKILLS

Programming: Python (numpy, pandas, scikit-learn, pytorch), R, C/C++, Java, bash, Matlab, Javascript, Linux systems, Git, \LaTeX

Languages: Fluent in Italian and English