PERSONAL INFORMATION

Giacomo Fantoni

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- https://github.com/giacThePhantom
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Gender Male | Date of birth 11 October 1999 | Nationality Italian

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

September 2021 – Present — Master's Degree in Quantitative and computational biology

University of Trento, Trento (Italy)

Master thesis *"Synchronization of neuronal activity in the antennal lobe of the honeybee during sleep"*, Supervisor Prof. A. Haase.

Relevant Coursework
- Bioinformatics.
- Machine Learning.
- Mathematical Modeling.
- Computational Biophysics.
- Function and plasticity of the Central Nervous System.

September 2018 – September 2021 — Bachelor's Degree in Computer Science

University of Trento, Trento (Italy)

Bachelor thesis *"Analysis of trascriptomic RNA-seq data from polisomial and total fraction from an epithelial cancer cellular line"*. Supervisor Prof. A. Inga. Final grade 108/110

Relevant Coursework
- Molecular biology.
- Genetics.

EXPERIENCE

March 2021 – August 2021 — Intern – Analysis of transcriptomic RNA-seq data

University of Trento, Department of CIBIO, Trento (Italy)

- Implemented a pipeline to process RNA-seq cancer data on a remote server.
- Analysed processed data using a combination of R and python to gain biological insights.
- The work is accessible at https://github.com/giacThePhantom/Tesi.

March 2021 – August 2021 — Intern – Computational modelling and simulation of the antennal lobe of the honeybee

University of Trento, Department of CiMeC, Trento (Italy)

- Implemented a gpu-accelerated computational model of the antennal lobe of the honeybee in python using the genn library.
- Analysed model results to gain biological insights from it.

PERSONAL PROJECTS

Personal coursework collection

Wrote in LaTeX all the material regarding the content of my university courses, making it accessible at https://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: https://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 https://github.com/giacThePhantom/CURBD.

PERSONAL SKILLS

Mother tongue   Italian

Other languages

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	
English				
C1	C1	C1	C1	C1

Levels: A1 and A2: Basic user – B1 and B2: Independent user – C1 and C2: Proficient user
Common European Framework of Reference for Languages

Digital competences

SELF-ASSESSMENT				
Information Processing	Communication	Content creation	Safety	Problem solving
Proficient user	Proficient user	Independent user	Proficient user	Proficient user

Digital competences - Self-assessment grid

Programming skills
– Python (numpy, pandas, scikit-learn, pytorch).
– R.
– C/C++.
– Java.
– Bash.
– Matlab.
– Javascript.
– Linux systems.
– Git.
– LaTeX.