Ilaria Ricchi

+1-857-999-7140
ilariaricchi95@gmail.com
/ilaria-ricchi95
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"Fatti non foste per viver come bruti ma per seguir virtute e canoscenza." [Dante Alighieri]

Education

Swiss Federal Institute of Technology of Lausanne (EPFL) 2017– present
MSc Life Science Engineering *Lausanne, Switzerland*
Major in Neuroscience and Neuroengineering
Minor in Computational Neuroscience

University of Pavia 2014– 2017
BSc Bioengineering *Pavia, Italy*
Final grade: 109/110

Experience

Master Thesis Project in Wei-Chung A. Lee's lab Sept. 2019 – Present
Neuroimaging Lab - Harvard Medical Scool *Boston, USA*
- Graph analysis and Automated cerebellar cell-type prediction through machine learning
- Supervisor: Wei-Chung Allen Lee

Computational Neuroscience Project in MIP and LTS4 labs Feb. 2019 – July 2019
Medical Image Processing and Signal Processing labs - EPFL & Campus Biotech *Lausanne & Geneva*
- Inference of multiple functional brain networks using Graph Laplacian Mixture Model
- Supervisors: Dimitri Van De Ville and Pascal Frossard

Lab Internship in BBP Sept. 2018 – Jan. 2019
Blue Brain Project - EPFL & Campus Biotech *Lausanne & Geneva*
- Graph analysis framework in the context of BBP project for analysis of a full rat connectome
- Supervisors: Eilif Muller and Dr. Michael W. Reimann

Summer Internship in bNovate & Technologies July 2018 – Sept. 2018
R&D Machine Learning Department *Lausanne, Switzerland*
- Automated outliers detection of bacterial contamination through fingerprinting (feature extraction) using Graph Analysis
- Precision reached: 98%

Bachelor Thesis Project in Egidio D'Angelo's lab Mar. 2017 – July 2017
Human Brain Project - University of Pavia *Pavia, Italy*
- Community Detection in a realistic model of cerebellar granular layer: clustering algorithms compared
- Supervisors: Egidio D'Angelo and Giovanni Magenes

Awards and Achievements

Bertarelli Fellowship Translational Neuroscience and Neuroengineering in Harvard Medical School
Sept. 2019 – Aug. 2020

Class Delegate Delegate of Students in Life Science Engineering section (EPFL)
Sept. 2018 – July 2019

1st Course of the Interantional School of Brain Cells and Ciruits Camillo Golgi School, Erice (Italy) – fully funded attendance
Nov, 29 – Dec, 3 2015

College Fellowship Merit College : Almo Collegio Borromeo (Pavia, Italy) – competitive entrance exam
Sept. 2014 – July 2017

Projects

Computational Motor Control Team Project

› Simulation of the locomotion of a robotic salamander.

Speech Sentiment Analysis Personal Project

› Deep Learning on audio dataset for speech recognition.

Brain Computer Interaction Team Project

› Brain Computer Interface framework: from EEG to online robot control.

Kaggle Challenge: Twitter text sentiment analysis Team Project

› Transfer Learning on tweets to classify sentiments.

Kaggle Challenge: CERN Higgs Boson prediction Team Project

› Lasso Regression to predict the formation of Higgs Boson particle.

Languages

Italian (Native), **English** (Fluent), **French** (Intermediate), **Spanish** (Basic)

Programming and Computer Skills

Programming Python, MATLAB (& Simulink), C, Keras, Pytorch, MongoDB, SQL, HTML, JSP, LaTeX, Arduino (basics), R (basics), Java (basics), Brian2, Neuron

Softwares ImageJ, Webots, JASP, Abaqus, SolidWorks, LabView, Microsoft

Operative Systems Linux, Windows

Personal Interests

Skills and interests Modelling, neurons and Brain connectivity, graphs analysis and Network Science. Machine Learning and data analysis in any application, better if finalized in understanding the Brain. Acquired skills in team works, collaborations and networking.

Hobbies Guitar, ukulele, piano, latino dance, hip hop, swimming and soccer.

Publications

Poster *"Inference of Multiple Functional Brain Networks using Graph Laplacian Mixture Model"* [Ilaria Ricchi, Hermina P. Meretic, Anjali Tarun, Pascal Frossard, Dimitri Van De Ville] – *in Network Science Workshop (EPFL)*

Paper (in preparation) Inference of Multiple Functional Brain Networks using Graph Laplacian Mixture Models