Simone Azeglio

Personal Information

Email simone.azeglio@edu.unito.it
Mobile Phone +39 335 736 9931
Personal Medium @simoneazeglio
LinkedIn simone-azeglio-1b3359106
Github sazio
Publication Medium mljcunito

Education

Oct 2014 – Apr 2018 **Bachelor in Physics** – *University of Turin, Turin, Italy.*

Oct 2018 – Apr 2021 **Master in Physics of Complex Systems** (current **GPA**: 4.0/4.0) – *University of Turin, Turin, Italy.*

Experience

Apr 2019 – Present **Research Leader** – Machine Learning Journal Club, *Turin, Italy*

- Collaborating with **Julia Computing** on Scientific Machine Learning. Recent paper accepted in *AAAI-MLPS2021*
- Designing and supervising several Machine Learning projects involving: Natural Language Processing, Computer Vision, Brain Computer Interfaces

Aug 2020 – Present **Visiting Research Student** – University of Ottawa, *Ottawa, Canada* (André Longtin's Lab)

- Working on my master thesis project: **Transients in Hippocampal Attractor Networks**, mainly nonlinear neuronal dynamics and chaos.
- Developing neuronal networks simulations in **Julia** & **Python** (Github)

May 2020 – Dec 2020 **Lead Mentor** – *ProjectX2020 Competition, University of Toronto*

- Presented the *University of Turin*, which has been accepted as the **only** Italian University
- Recruited and **supervised** *University of Turin's* Team. Working on **Physics Informed Neural Networks** techniques - in **Julia** - for wildfire propagation models.
- **Lead mentors** and organizing educational materials.

Jul 2019 – Sep 2019
Jul 2018 – Sep 2018 **Visiting Research Student** – University of Ottawa, *Ottawa, Canada* (Cognitive Neuroscience, Maler's Lab - In collaboration with André Longtin)

- Increased animal tracking accuracy by **33%** and reduced manual labelling time by **90%** by introducing **DeepLabCut** (based on CNNs) instead of non-Deep-Learning based softwares.
- Solved trajectory modeling by designing a "*postural space*" by using **UMAP**.

Feb 2017 – Apr 2018 **Research Assistant (Undergraduate)** – I.N.Ri.M, *Turin, Italy*, (Quantum Information, Genovese's Lab)

- Designing, running and analyzing data for an experiment on the **violation of a Leggett-Garg inequality** (foundations of Quantum Mechanics).
- Expanding personal knowledge on **Quantum Computing** and Information.

Leadership and Awards

Dec 2020 – Mar 2021 **Overseas Mobility Scholarship** – *University of Turin, Turin, Italy*

- Awarded with a **4-months** scholarship (maximum allowed) for my Master Thesis project

Mar 2020 – Present **International Admission Scholarship** – *University of Ottawa, Ottawa, Canada*

- Selected as the **only winner** of this international scholarship for research purposes (approx. 132k CAD) in the March 2020 session.

Apr 2019 – Present **Founder & President** – *Machine Learning Journal Club, Turin, Italy*

- Created the **1st Italian** collaborative research project (*non-profit organization*) managed by students, in cooperation with the University of Turin.

- Teaching **Python** for Scientific Computing and Practical Machine (and Deep) Learning to undergraduate and graduate students.
- Designing possible solutions to high-impact problems on society, e.g. **Fake News Detection**, **DeepFakes** or **Covid19** spreading modeling

Apr 2019 – Present **Co-opted Students Representative**

- Designated as Students Representative by the Head of Physics of Complex Systems after the creation of the Machine Learning Journal Club.

Sep 2018 – Sep 2018 **Data Mining Challenge** – Class Challenge, **1st** classified

- Developed NLP models for sentiment analysis, e.g **Word2Vec**, **Doc2Vec**.
- Designed **Data Augmentation** strategies on embedded spaces.

Jul 2014 – Sep 2014 **Master Talenti Neodiplomati** – Scholarship (CRT Foundation)

- Selected as **1 out of 103** eligible students for a *studying-working* 3-months experience in Malta.

Jun 2010 – Jun 2010
Jun 2011 – Jun 2011 **GloBall Cup** *Enköping, Sweden*, **2nd** Classified

- Represented Italy with my football team (ASD Fulgor Ronco Valdengo) patronised by **UNICEF**.

Background Knowledge & Skills

Summer Schools

Jan 2021 – Jan 2021 **Mediterranean Machine Learning Summer School**,*(web-based due to Covid19)*

Jul 2020 – Jul 2020 **Lviv Data Science Summer School**, *Ukrainian Catholic University (web-based due to Covid19)*

May 2018 – Jun 2018 **Eight Summer School of the Centre for Neural Dynamics** *University of Ottawa, Ottawa, Canada*

- Simulating a "strokes toy model" by using **AllenSDK** for data retrieval.

Training Programs

Dec 2020 – Present **Personalized Multi-Scale Brain Simulation** *Bernstein Center for Computational Neuroscience, Berlin & Charité Doctorate Program*

- Theoretical background of large-scale brain network modeling and practical session for individualization of brain network modeling, processing of brain images (MRI, fMRI, DTI, PET) and electrophysiological data (EEG, MEG)

Oct 2020 – Present **InnoVentureLab Pre-accelerator Program** *Polytechnic University of Milan & Polytechnic University of Turin*

Oct 2020 – Dec 2020 **HelloAIRIS** *EITHealth*

- Training program designed to introduce participants to the field of AI in Healthcare. Mentored by experts from **GE**, **KTH** and **LEITAT**.

Coursera's Certificates

Dec 2020 - Present **Natural Language Processing Specialization (deeplearning.ai)**

Apr 2020 - Present **Advanced Machine Learning Specialization (HSE, Moscow)**

Apr 2020 - Present **AI for Medicine Specialization (Deeplearning.ai)**

Apr 2020 - May 2020 **Information Visualization Specialization (NYU, New York City)**

Apr 2020 - May 2020 **Tensorflow in Practice Specialization (Deeplearning.ai)**

Mar 2020 - Apr 2020 **IBM AI Engineering Professional Certificate (IBM)**

Julia Academy

Oct 2020 **Introduction to Julia (for Programmers)**

Oct 2020 **Julia for Data Science**

Programming Languages

Python, *Advanced.* (Numpy, Scipy, Pandas, Matplotlib, Plotly, OpenCV, Scikit-Learn, Tensorflow, PyTorch, Microsoft Malmo, geopandas, libpysal).

Julia, *Foundations* of Scientific Machine Learning, Parallel Computing.

SQL, *Foundations* of Databases management (SQLite)

CSS, HTML, Javascript, Tableau, *Foundations* of Web Development and Data Visualization(D3.js , Tensorflow.js).

C++ and **Java**, *Foundations* of OOP(ROOT Framework).

GCP and **AWS**, *Foundations* of Cloud Computing and Web Services.

Git, operative knowledge of version control systems.

Linux OS, operative knowledge.

Languages

Italian, *Native.* **English**, *Advanced.* **French**, *Elementary.*

Interests

Hackathons

Oct 2020 - Oct 2020 **BR41N.IO (Toronto)**, International Brain Computer Interface Hackathon. I've been working on EEG data, introducing **Manifold Learning** techniques for a classification problem.

May 2020 – Aug 2020 **Top 4 Finalist in BuildwithAI Global Hack**, a bi-annual global hackathon centred around the application of data science and artificial intelligence processes to address global challenges. Designing a desktop app to check respiratory patterns.

Nov 2019 – Nov 2019 **B-Pioneers** (organized by **Biogen** and **Wired**): Selected to Compete in order to create highly innovative solutions for people affected by **SMA** (**S**pinal **M**uscular **A**trophy). Applications of Complex Systems Physics to biometric data.

Personal Projects

Jun 2020 – Present **GAMELEON**: A multi-agent simulation of Covid-19 epidemics in the city of Toronto.

- Learning to process **GIS** data with Python, multiplex networks with Python (*multinetx*), multi-agent-systems with **GAMA** and some basics about APIs (e.g. TomTom API for traffic data). Source code at https://github.com/sazio/MultiAgentCovid/

May 2020 – Present **How to Tackle a Machine Learning Competition**: A tutorial series on practical Machine Learning and useful Data Science for competitions.

- I've designed - and personally written and coded a few lectures - this series as a propaedeutic material for the students I've been mentoring for **ProjectX2020**. Source at https://github.com/MachineLearningJournalClub/HowToTackleAMLCompetition

May 2018 – Jun 2018 **MineNavigation**: Navigation Tasks in a Reinforcement Learning Framework

- Developed a Reinforcement Learning exploration strategy for my Minecraft Agent (**Project Malmo**). Source at terna.to.it/tesineEconofisica/navigation.htm

Volunteering

Mar 2020 – Jun 2020 **Covid-19 Forecasting**: Building parts of database by annotating useful news epidemicforecasting.org - **Future of Humanity Institute, University of Oxford**

Mar 2020 **Covid-19 News Tracker**: Annotating news for sentiment analysis purposes covid19.scops.ai - **University of Greenwich & ISI Foundation**

Sept 2017 – Mar 2018 **TEDxTorino**: Collaborating as a translator (Italian to English) and as a member of Curators Team.

Oct 2014 – Mar 2015 **Coding with EFF**: Looking for bugs in *HTTPS Everywhere.*

Publications and Workshops

Papers

Dec 2020 **Physics-Informed Machine Learning Simulator for Wildfire Propagation**, On (arXiv), currently accepted to AAAI-MLPS 2021.

Workshop Talks

Feb 2020 **Machine Learning Meets Chemistry** – Organized by the Department of Chemistry (University of Turin) (Programme)

- Presenting Machine Learning Journal Club as a contribution to Open Science.
- Discussing Graph Neural Networks approaches in Science.

Workshop Posters

Jan 2021 **Mediterranean Machine Learning Summer School** – (https://www.m2lschool.org/)

- Presenting "Physics-Informed Machine Learning Simulator for Wildfire Propagation" paper. Selected among "outstanding" posters.

Sep 2018 **Neural Coding 2018** – International Workshop on Theoretical and Computational Neuroscience (www.neuralcoding2018.unito.it)

- Presenting the results from my research period at the University of Ottawa.

May 2017 **Quantum 2017** – International Workshop on Quantum Optics and Quantum Information (www.quantum2017.unito.it)

- Presenting my Undergraduate thesis project.