Alessandro Lussana

Predoctoral Fellow @ European Bioinformatics Institute (EMBL-EBI)

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Profile

Technical Skills Python, PyTorch, R, Bash, Awk, Sed, Git, Nextflow, Snakemake, Linux, Slurm, Docker, Apptainer
Languages English (C1 CEFR level), Italian (native)
Art Technology Inkscape, GIMP
Interests Data-driven Discovery and Decision Making, Automation, DIY Electronics, Gliding, Judo

Work Experience

European Bioinformatics Institute (EMBL-EBI)
Predoctoral Fellow — Wellcome Genome Campus, Hinxton, UK (Oct 2021 - present)
- Develops computational methods to explain context-specific cellular signalling responses
- Supervisor: Dr. Evangelia Petsalaki

European Molecular Biology Laboratory (EMBL)
Staff Association Representative — Wellcome Genome Campus, Hinxton, UK (Apr 2023 - Apr 2024)
- Elective role in an International Organisation
- Contributed to the relationship between Management and Staff, and to the functioning of the Organisation

IRCCS San Raffaele Scientific Institute
Research Fellow — San Raffaele Hospital, Milan, Italy (Oct 2020 - Jun 2021)
- Designed computational pipelines to handle and analyze bulk and single-cell RNA-seq data
- Supervisors: Prof. Matteo Iannacone, Dr. Marco J. Morelli

Tampere University
Research Assistant — Arvo Building, Tampere, Finland (Feb 2020 - Sep 2020)
- Adapted deep learning models to analyze chromatin accessibility data from prostate cancer samples
- Supervisor: Prof. Matti Nykter

University Of Turin
Student Trainee — Molecular Biotechnology Center, Turin, Italy (Apr 2017 - Sep 2018)
- Developed a software package to analyze human genetic variation and its effect on gene expression
- Supervisor: Prof. Paolo Provero

Education

University Of Cambridge — Cambridge, UK (Oct 2021 - present)
- PhD in Biological Sciences, EMBL International Predoctoral Programme
- Institution-level Admission Rate: 2.7%

University Of Bologna — Bologna, Italy (Oct 2018 - Sep 2020)
- International M. Sc. in Bioinformatics
- Weighted Average: 29.09/30.00. Final Graduation Mark: 110/110 Cum Laude

University Of Turin — Turin, Italy (Oct 2015 - Jul 2018)
- B. Sc. in Biotechnology
- Weighted Average: 28.3/30.00. Final Graduation Mark: 110/110 Cum Laude

Selected Projects

Software Package (2025)
- XBoolArray: A Python module providing a multidimensional boolean array with annotated dimensions and coordinates

Academic Project (2025)
- Data-driven extraction of human kinase-substrate relationships from omics datasets

Academic Project (2024)
- PhosX: data-driven kinase activity inference from phosphoproteomics experiments

Algorithm (2023)
- TrieSUS, an efficient algorithm to find the Smallest Unique Subset (SUS)

Personal Project (2022)
- Personal website and blog, http://alussana.xyz

Academic Project (2021)
- Prediction of gene expression from regulatory sequence composition enhances transcriptome-wide association studies

Personal Project (2020)
- WebXiv, an NGINX web server running in a Docker container for remote file access

Academic Project (2020)
- Chromatin accessibility analysis uncovers regulatory element landscape in prostate cancer progression

Curricular Project (2019)
- A Support Vector Machine-based Method To Accurately Predict Protein Secondary Structure

Software Package (2018)
- A functional approach to impute Genetically Regulated Expression

Invited Talks and Awards

Regulatory and Systems Genomics RSGDREAM Conference, Madison, WI (2024)
- Talk title: "Modeling interactions between genetics and environment to understand and prevent disease"
- Invited upon winning the PEGS DREAM international data science challenge

Human Proteome Organization HUPO 2024 Conference, Dresden, Germany (2024)
- Poster title: "PhosX: data-driven kinase activity inference from phosphoproteomics experiments"
- Travel Award granted by HUPO and BSPR

Teaching

Primer for Predocs Course, Cambridge, UK (2024)
- Designed and delivered lecture on software containerization and workflow management
- Designed exercises on containers: https://github.com/alussana/primer4predocs