Giovanni Visonà

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Current Position

Biomedical AI/ML Engineer *Heidelberg, Germany*
GSK.ai *2024 – Ongoing*

- Research and development of state-of-the-art ML models to optimize performance on a range of biomedical prediction tasks, leading to models that are being considered for registration as medical devices.
- Consistently top 3 in my department for both code contributions and code reviews in the past 4 quarters.
- Implemented bespoke support tools to enhance job scheduling and experiment analysis for my team. This resulted in an improved throughput of training jobs by a factor of ~ 3.
- Liaised with experts in biology, medicine, and clinical trials to ensure optimal collection of data to train biomedical ML models.
- Secure handling of sensitive data.

Skills, Technologies, and Scientific Expertise

Programming Languages: Python, R, Go, SQL

Tools: Pytorch, Pandas, Polars, Ibis, DuckDB, FastAPI, Scikit-learn, SQLite, HDF5, Git, Github, Docker, Kubernetes (CKAD-certified), Spark, Airflow

Software Engineering: CI/CD (Azure, Github Actions), Cloud Computing (GCP)

Machine learning and Data Science: Deep Learning, Reinforcement Learning, Classical ML (GLMs, Trees, GAMs, etc.), Diffusion Models, EDA, Data Visualization, Interpretable ML, Graph ML, Data Modelling

Probability and Statistics: Hypothesis testing, A/B testing, Linear Algebra

Biology and Medicine: Epigenetics, Genomics, Proteins, Pathways, Molecular Networks, Immunology, Small Molecules, Molecular Dynamics, Clinical Data (EHRs), Antimicrobial Resistance, Mass Spectrometry

Experience

ESR Researcher in Machine Learning for Precision Medicine *Tübingen, Germany*
Max Planck Institute for Intelligent Systems *2019 – 2024*

- Designed and implemented deep-learning-based models and probabilistic models to solve problems in biology and biomedicine.
- Published as first author or shared first author in internationally renowned journals, including Nature Communications, Bioinformatics, and Briefings in Bioinformatics.
- ESR in the Marie Curie Innovative Training Network entitled "Machine Learning Frontiers in Precision Medicine"

Junior Developer and Consultant *Padova, Italy*
Espedia Consulting - Ethica Group *2016 – 2018*

- Contributed to the creation of customized software solutions for a variety of clients, prioritizing robustness in design, and ensuring on-time delivery.

Education

University of Tübingen *2019 – 2025*
PhD in Computer Science

- Thesis: "Biomedical Machine Learning Beyond the Training Distribution".

University of Edinburgh *2018 - 2019*
MSc in Artificial Intelligence

University of Trento *2014 – 2016*
Master's Degree in Physics

Università di Torino *2012 – 2014*
Bachelor's Degree in Physics

Publications

Network propagation for GWAS analysis: a practical guide to leveraging molecular networks for disease gene discovery 2024
Briefings in Bioinformatics, DOI: 10.1093/bib/bbae014

Multimodal learning in clinical proteomics: enhancing antimicrobial resistance prediction models with chemical information 2023
Bioinformatics, DOI: 10.1093/bioinformatics/btad717

A historical perspective of biomedical explainable AI research 2023
Patterns, DOI: 10.1016/j.patter.2023.100830

Getting personal with epigenetics: towards individual-specific epigenomic imputation with machine learning 2023
Nature Communications, DOI: 10.1038/s41467-023-40211-2

Machine-Learning-Aided Prediction of Brain Metastases Development in Non–Small-Cell Lung Cancers 2023
Clinical Lung Cancer, DOI: 10.1016/j.cllc.2023.08.002

Targeted dose enhancement in radiotherapy for breast cancer using gold nanoparticles, part 2: a treatment planning study 2017
Medical Physics, DOI: 10.1002/mp.12178

Targeted dose enhancement in radiotherapy for breast cancer using gold nanoparticles, part 1: A radiobiological model study 2017
Medical Physics, DOI: 10.1002/mp.12180