



Matteo Pozzi

Date of birth: | **Nationality:** Italian | **Phone number:** |
Email address: | **Email address:** | **LinkedIn:** |
Address:

ABOUT ME

PhD student working on Digital Pathology and explainable artificial intelligence.
With a bachelor in biology, followed by a master of science in computational I am passionate about understanding medical and biological complexity with tools and methods from the mathematical and computer science world. Interdisciplinary works, and knowledge sharing, are what drive me the most toward addressing challenging tasks and problems.
In addition to my scientific research, I have a keen interest in high-performance computing (HPC) setup and administration, particularly for deep learning applications. My technical expertise spans hardware configurations and administration, from GPUs to storage solutions optimized for GPU-intensive tasks.

WORK EXPERIENCE

01/01/2024 – 30/09/2024 Nijmegen, Netherlands

VISITING PHD STUDENT RADBOUD UNIVERSITY MEDICAL CENTER

- Development of AI tools and computational pipelines to assist pathologist's workflow
- Maintenance of HPC hardware and software

Department Diagnostic Image Analysis (DIAG) - Computational Pathology group |

Website <https://www.diagnijmegen.nl/research/pathology/>

03/2021 – 10/2021 Trento and Milan, Italy

INTERSHIP UNIVERSITY OF TRENTO - HUMAN TECHNOPOLE

During this internship I worked on CRISPRcas9 knockout data deriving from a new effort carried out by two leading international institutions.

I analyzed and explored different datasets as well as cutting edge statistical pipelines to deal with and integrate these data.

I applied machine learning methods to gain new insights, elucidate the mechanism of action of drugs and the identification of new potential anticancer combinatorial therapies.

11/03/2019 – 06/2019 Parma, Italy

INTERSHIP UNIVERSITY OF PARMA, LABORATORY OF COMPUTATIONAL BIOPHYSICS

During my internship I carried out several molecular dynamics simulations on two pathological mutants of the retinol binding proteins (RBP), both apo and holo version.

The aim of this project was to reveal novel insights which could highlight the conformational and dynamical differences between the wild types and the pathological proteins. These differences might correlate with the inability of the mutated protein to properly delivery its ligand to the target.

EDUCATION AND TRAINING

09/2019 – 10/2021 Trento, Italy

Main focus on:

- Bioninformatics (Global-Local sequence alignment, Substitution matrices, FASTA, BLAST, CLUSTALW, Geneexpression, Gene Ontology, Enrichment, Networks, GWAS) grade: 29/30
- Biostatistics (Statistics and probability, Linear Algebra) grade: 27/30
- Scientific programming (Pyhton, algorithms and data structure) grade: 27/30
- Biotechnology Engineering(Metabolic Eng, Tissue Eng) grade:30/30 cum laude
- Biological Networks and Data Analysis (Networks Modeling and simulations, Network based data analysis) grade:30/30
- Genomics (Microbial genomics, Human Genomics,) grade: 30/30
- Signal Image and Video processing (digital signal transformation, image foundation and processing, videoprocessing) grade:28/30
- Data Mining (Laboratory of Biological data mining; Machine learning: SVM, SVR, KNN, K-means, Perceptron, nonlinear SVM, kernels, Neural Networks, Hierarchical Clustering, Gaussian Mixture Models, Bayesian Networks, Decision Tree) grade:30/30

Website <https://offertaformativa.unitn.it/en/lm/quantitative-and-computational-biology> | Field of study Computational Biology |

Final grade 110/110 Cum Laude 10/2016 –

18/07/2019 Parma, Italy

BACHELOR DEGREE IN BIOLOGY University of Parma

Main focus on:

- Inorganic Chemistry
- Organic Chemistry
- Biochemistry
- Molecular Biology
- Cell Biology
- Human physiology
- Human genetics
- Statistics
- Introduction to Bioinformatics
- Computational Biophysics

Field of study Biology | Final grade 104/110

09/2010 – 06/2016 Salò, Italy

SCIENTIFIC HIGH SCHOOL DEGREE Liceo Scientifico Enrico Fermi

10/2021 – CURRENT Trento, Italy

PHD CANDIDATE University of Trento - Fondazione Bruno Kessler

Field of study Health and welfare

● LANGUAGE SKILLS

Mother tongue(s): ITALIAN Other

language(s):

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken production	Spoken interaction	

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

DIGITAL SKILLS

Programming

Python | R | Pytorch | Pytorch Lightning | MATLAB

OS

Linux / Ubuntu | Windows

Other Git |

LaTeX

analytical

Statistics | machine learning | Deep learnming

System Administration

GPU HPC | SLURM HPC | system administrator

PUBLICATIONS

2024

[Scoring Tumor-Infiltrating Lymphocytes in breast DCIS: A guideline-driven artificial intelligence approach](#)

This study focuses on the assessment of Tumor-Infiltrating Lymphocytes (TILs) in Breast ductal carcinoma in situ (DCIS) by integrating artificial intelligence with international guidelines. The design of the pipeline the study is grounded on interpretability by design, with the goal to accelerate its adoption in the clinic.

2024

[Investigating the mechanisms underlying resistance to chemotherapy and to CRISPR-Cas9 in cancer cell lines](#)

In this study we aimed to gain insights into the specific mechanisms of MDR in cancer cell lines, we developed a novel method for the combined analysis of recently published datasets on drug sensitivity and CRISPR loss-of-function screens for the same set of cancer cell lines. 2023

[Generating synthetic data in digital pathology through diffusion models: a multifaceted approach to evaluation](#)

In this study I generated synthetic digital pathology data and evaluated them using an integrated evaluation procedure.

2023

[Cutting-edge technology and automation in the pathology laboratory](#)

Review in which we describe state-of-the-art of automation in pathology laboratories in order to lead technological progress and evolution of the processes in pathology units.

2022

[Automatically detecting Crohn’s disease and Ulcerative Colitis from endoscopic imaging](#)

In this study we develop a deep learning (DL) prototype to identify disease patterns through three binary classification tasks, namely (1) discriminating positive (pathological) samples from negative (healthy) samples (P vs N); (2) discrimination between Ulcerative Colitis and Crohn’s Disease samples (UC vs CD) and, (3) discrimination between Ulcerative Colitis and negative (healthy) samples (UC vs N).

DRIVING LICENCE

Driving Licence: B

● CONFERENCES AND SEMINARS

15/06/2023 – 17/06/2023 Budapest

Poster presentation at the European Congress on Digital Pathology (ECDP2023)

Diffusion models for WSI generation: a synthetic step towards supporting sharing and mitigating imbalance

Link <https://www.ecdp2023.org/posters/> 05/10/2024 –

10/10/2024 Marrakech, Morocco

Poster presentation at the 27th international conference on Medical Image Computing and Computer Assisted Intervention (MICCAI2924)

Scoring Tumor-Infiltrating Lymphocytes in breast DCIS: A guideline-driven artificial intelligence approach

Presented et the COMPAYL workshop Link

<https://www.compayl.com/program>