

# Antonio Collesei

Padova | antonio.collesei@gmail.com | +39 340 1521 161 | antoniocollesei.github.io  
linkedin.com/in/antoniocollesei | github.com/antoniocollesei

## Professional Summary

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Highly motivated Researcher in Bioinformatics with hands-on experience in designing, developing, and evaluating Machine Learning/AI, and Deep Learning models applied to complex biomedical data. Strong computational background (Ph.D. in Bioinformatics) with proven ability to implement end-to-end AI/ML pipelines in Python using the most common major frameworks. Experienced in model optimization, data analysis, and technical documentation, and comfortable collaborating within multidisciplinary teams. Currently exploring options outside the academic setting. Interested to contribute to innovative AI algorithms in a challenging and competitive environment, with a deep interest in the translational potential of LLMs and their applications. In my personal website you can find recent projects and contributions, as a showcase.

## Current Position

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<b>Researcher in Bioinformatics</b> <i>Veneto Institute of Oncology (IOV-IRCCS), University of Padova</i>	Since Oct 2023
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## Education and Employment

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<b>Ph.D. in Bioinformatics</b> <i>Cum Laude</i> University of Padova Supervisor: Prof. Fabio Vandin	Oct 2020 – May 2024
<b>Master in Big Data Analysis for Biomedical Research</b> University of Padova Supervisor: Prof. Fabio Vandin	Oct 2019 – Sep 2020
<b>Biomedical Engineer</b> Inventis s.r.l. International technical relations (North America, Continental Europe)	Sep 2018 – Sep 2020
<b>Stage</b> NGS s.r.l. Development of tailored cybersecurity solutions	Feb 2018 – Aug 2018
<b>Research Fellowship</b> Medical University of Innsbruck Supervisor: Prof. Zlatko Trajanoski, Prof. Francesca Finotello	Mar 2017 – Nov 2017
<b>M.Sc. in Bioengineering</b> University of Padova Thesis Supervisor: Prof. Barbara Di Camillo	Dec 2015 – Dec 2017
<b>B.Sc. in Information Engineering</b> University of Padova Thesis Supervisor: Prof. Gianna Maria Toffolo	Sep 2012 – Nov 2015

## Technical Skills

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### Machine Learning & AI

- Design, development and optimization of robust and scalable AI/ML solutions.
- Experience with core ML libraries in python: **Scikit-Learn**, **Matplotlib**, **Plotly**.
- Additional programming experience with **R**.
- Experience with deep learning and NLP frameworks: **PyTorch**, **Hugging Face Transformers**.
- Knowledge of evaluation metrics for AI/ML model assessment.
- Understanding of generative models and LLM theory.

### Software Engineering

- Proficient with version control systems: **Git**.
- Experience with containerization and virtualization tools: **Docker**, **Singularity**, and package management: **Conda/Mamba**.
- Development in HPC environments: **CUDA**.

### Cloud & Big Data Ecosystems

- Familiarity with cloud platforms supporting AI development: **AWS**, **Azure**.

### Documentation & Communication

- Experience producing and maintaining technical documentation and pipelines.
- Strong presentation and communication skills acquired through worldwide congresses.

## Certifications

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Professional Practice License (Esame di Stato) as Information Engineer (2021)

IELTS English C1-Level (2019)

## Selected Publications (2020-2025) - current h-index: 4 (Scopus, Dec 2025)

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\* denotes equal contribution

**SHISMA: SHape-driven Inference of Significant celltype-specific Subnetworks from tiMe series single-cell trAnscriptomics**

Under Review

*Antonio Collesei, et al.*

*Bioinformatics*

**Development of two machine-learning models to predict conversion from primary HER2+ breast cancer to HER2-low metastases: a proof-of-concept study**

Dec 2024

*Federica Miglietta\*, Antonio Collesei\*, et al.*  
*ESMO Open*

**ALLSTAR: inference of reliable causal rules between somatic mutations and cancer phenotypes**

Jul 2024

*Dario Simionato\*, Antonio Collesei\*, Federica Miglietta, Fabio Vandin*  
*Bioinformatics* 10.1093/bioinformatics/btae449

**Which extra-renal flare is 'difficult to treat' in systemic lupus erythematosus? A one-year longitudinal study comparing traditional and machine learning approaches**

Feb 2024

*Michele Maffi, [...], Antonio Collesei\*, Marta Mosca\**  
*Rheumatology* 10.1093/rheumatology/kead166