Euxhen Hasanaj

LinkedIn | Personal Website | GitHub

Research Expertise: Machine Learning & Biotechnology: senescence/aging • drug discovery • graph learning • generative models • biological foundation models • multimodal learning • perturbation studies

Professional Experience

GenBio AI — Palo Alto, CA
Research Scientist, Machine Learning — *Dec. 2024 – Present*

- Leading development of multiscale foundation models for predicting single-cell perturbation responses.
- Architecting scalable ML pipelines to integrate transcriptomics, proteomics, and spatial data modalities.

Sanofi — Cambridge, MA
Computational and Systems Biology Intern — *May 2023 – Aug. 2023*

- Designed a pseudotime-ordering algorithm based on multi-commodity flow to align heterogeneous patient trajectories.
- Applied to psoriasis, COVID-19, and Crohn's disease clinical datasets; results published at ISMB 2024.

University of Pittsburgh School of Medicine — Pittsburgh, PA
Laboratory Apprentice — *Nov. 2022 – May 2023*

- Induced cellular senescence in human cell cultures via chemotherapeutics (bleomycin, doxorubicin) and irradiation.
- Identified 100 novel aging markers; developed a positive-unlabeled learning framework for senescence signature discovery.

Genesis Therapeutics — Burlingame, CA
Machine Learning Intern — *May 2022 – Aug. 2022*

- Trained generative language models on SMILES strings for de novo molecule design; optimized for novelty and synthetic accessibility.

Ritech Solutions — Tirana, Albania
Machine Learning Engineer — *Jan. 2021 – Aug. 2021*

- Deployed deep learning models for monocular depth estimation and image classification in industrial inspection pipelines.

Machine Learning Engineer — Sofia, Bulgaria
Centroida — *Nov. 2017 – Aug. 2018*

- Developed real-time face detection and tracking algorithms using convolutional neural networks.

Education

Carnegie Mellon University — Pittsburgh, PA
Ph.D. in Machine Learning | *GPA: 4.00* — *Aug. 2021 – Dec. 2024*

- Dissertation: "Machine Learning Strategies for Biomarker Discovery: A Senescence Case Study"
- TA: Convex Optimization; Machine Learning with Large Datasets
- Developed algorithms for biomarker discovery, trajectory inference, and dynamic gene-regulatory network reconstruction.

Carnegie Mellon University — Pittsburgh, PA
M.S. in Machine Learning | *GPA: 4.15* — *Aug. 2019 – Dec. 2020*

- Built Cellar, an interactive software for single-cell data integration and cell-type annotation.

American University in Bulgaria — Blagoevgrad, Bulgaria
B.A. in Computer Science & Mathematics | *GPA: 3.99* — *Sep. 2015 – May 2019*

- Salutatorian, Class of 2019
- Study Abroad: University of Iowa

Selected Publications [Google Scholar]

SenSet, a novel human lung senescence cell gene signature, identifies cell-specific senescence
Euxhen Hasanaj, Delphine Beaulieu, Cankun Wang, et al. *Under Review*

Recovering time-varying networks from single-cell data
Euxhen Hasanaj, Barnabás Póczos, Ziv Bar-Joseph *Intelligent Systems for Molecular Biology (ISMB), Jul. 2025*

Integrating patients in time series clinical transcriptomics data
Euxhen Hasanaj, Sachin Mathur, Ziv Bar-Joseph *Intelligent Systems for Molecular Biology (ISMB), Jul. 2024*

scDOT: optimal transport for mapping senescent cells in spatial transcriptomics
Nam D. Nguyen, Lorena Rosas, Timur Khaliullin, Peiran Jiang, **Euxhen Hasanaj**, et al. *Genome Biology, Nov. 2024*

AutoML Decathlon: Diverse Tasks, Modern Methods, and Efficiency at Scale
Nicholas Roberts, et al. *Proceedings of Machine Learning Research, Dec. 2022*

Multiset multicover methods for discriminative marker selection
Euxhen Hasanaj, Amir Alavi, Anupam Gupta, Barnabás Póczos, Ziv Bar-Joseph *Cell Reports Methods, Oct. 2022*

Interactive single-cell data analysis using Cellar
Euxhen Hasanaj, Jingtao Wang, Arjun Sarathi, Jun Ding, Ziv Bar-Joseph *Nature Communications, Apr. 2022*

Honors & Awards

Competitions

2022 **4th place**, NeurIPS AutoML Decathlon Competition
2019 **Silver Medal**, International Mathematics Competition for University Students (IMC)
2018 **Silver Medal**, Computational Mathematics Competition, Bulgaria
2018 **Honorable Mention**, International Mathematics Competition for University Students (IMC)
2017 **Bronze Medal** (team), ACM, Southeastern Europe Regional Programming Contest, Romania
2017 **2nd Place** (team), National Programming Contest, Bulgaria
2016 **Honorable Mention** (team), ACM, Southeastern Europe Regional Programming Contest, Romania
2015 **Honorable Mention**, International Mathematical Olympiad (IMO), Thailand
2015 **2nd Place**, National Mathematical Olympiad, Albania
2015 **3rd Place**, National Chemistry Olympiad, Albania

Academia

2019-20 **Excellence Fellow**, Ministry of Education, Sport and Youth, Albania
2019 **Salutatorian – Class of 2019**, American University in Bulgaria
2019 **Outstanding Achievement in Computer Science**, American University in Bulgaria
2019 **Outstanding Achievement in Mathematics**, American University in Bulgaria
2015-19 **Dean's List**, American University in Bulgaria
2015-19 **AADF Scholar**, Albanian-American Development Foundation

Professional Service & Memberships

NIH Cellular Senescence Network (SenNet) Consortium
Member - Consortium Organization and Data Coordinating Center (CODCC) *Sep. 2022 – Present*

- Developed methods to discover senescence biomarkers as a member of the Biomarker Working Group.

NIH Human BioMolecular Atlas Program (HuBMAP) Consortium
Member - Platform Development and Data Analysis Team *Aug. 2019 – Dec. 2020*

- Developed software tools to enable large-scale collaborations, integration, and comparisons across many different single-cell omics platforms and modalities.

Mathematics Club (Polygon) American University in Bulgaria
Founder/President *Sep. 2017 – May 2019*

- Organized several events including talks by students and professors, mathematics competitions, and social events between math students and professors.