

Elior Benarous

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EDUCATION

Harvard University

Boston | Apr 2024 – May 2025

Graduate Research Fellow in Diffusion Models

Computational Robotics Lab ([Prof. Heng Yang](#) & [Prof. Yilun Du](#))

- Project: Improving diffusion models with RLHF for image editing with precise structure preservation

ETH Zürich (ETH)

Zürich | 2022 – 2024

MSc Artificial Intelligence & Robotics

Data Analytics Lab ([Prof. Thomas Hofmann](#))

- Relevant subjects: Deep Learning, Computer Vision, Probabilistic Artificial Intelligence

University College London (UCL)

London | 2019 – 2022

BEng Mechanical Engineering

*First Class Honours (77% average), **Ranked 4th** in programme*

- Relevant subjects: Machine Learning & Neural Computing, Mathematics, Robotics, Control Systems

PUBLICATIONS & TECHNICAL PROJECTS

1. Harnessing Synthetic Datasets: The Role of Shape Bias in Deep Neural Network Generalization

E. Benarous, S. Anagnostidis, L. Biggio, T. Hofmann

Advances in Neural Information Processing Systems Workshop (NeurIPS), 2023 [[Paper](#)]

2. Multi-Modal Semantic & Geometric Perception for Off-road Navigation

E. Benarous, D. Atha, M. Hutter

NASA Jet Propulsion Laboratory, 2023 [Talk + Internal research paper pending publication approval]

3. Enforcing Style Invariance in Patch Localization

E. Benarous*, D. Brunner*, J. Manz*, F. Yang*, T. Hofmann

ETH Zürich Data Analytics Lab, 2022 [[Paper](#)]

UCL Bachelor Thesis

London | Oct 2021 – May 2022

Lead Research Student

- Built a multi-viewpoint and multimodal computer vision framework to detect objects flowing on a conveyor belt and developed the dynamic pick-and-place control of a robotic arm to sort them. Academic report awarded 79%
- Conceived to integrate RGB and hyperspectral cameras for precise acquisition of shape, position and material properties

UCL Football Match Forecasting Study

London | Oct 2021 – Jan 2022

Project Leader

- Led a cross-functional team to create an ML model for predicting Premier League football match outcomes
- Crafted a robust data pipeline: automation of data acquisition, in-depth feature analysis (PCA, correlation), and exploration of diverse ML model architectures. Attained >60% accuracy and received Highest Honours for the technical report

PROFESSIONAL EXPERIENCE

NASA Jet Propulsion Laboratory Pasadena | Sep 2023 – Mar 2024

Artificial Intelligence Research Intern

- Conducted semantic perception research for the DARPA RACER project, aiming to improve fast autonomous driving in complex off-road environments for future Mars & Moon Rover Exploration missions
- Investigated multi-modal outlier detection to improve model reliability, safety, and robustness in high-risk environments
- Integrated semantics into autonomy architecture for traversability forecasting in uncertain terrains

Wasteflow Lausanne | May 2023 – Mar 2024

CTO & Co-Founder

- Founded an AI-driven startup on waste identification to improve recycling. Advised by Prof. Mathieu Salzmann
- Collaborated with the EPFL Computer Vision Lab to manage student research projects and align academic & industry goals
- Directed technical projects and supervised a team of 12 students & engineers to build a detection system using RGB-D data
- Designed a semi-auto data labelling pipeline using Segment-Anything-Model, achieved a reduction in annotation time of 6x

Greyparrot.AI (Series B Tech Startup) London | July 2022 – Aug 2022

Computer Vision Research Intern

- Developed a high-precision & high-robustness object speed tracking algorithm (error margin: ±0.01% of images’ resolution). Software now deployed in 50+ recycling facilities to enhance recycling rates and used as benchmark for future research
- Refined post-processing deduplication for YOLOv5’s material detections by implementing classical feature detection, matching, and optical flow techniques. Released this feature in major facilities, including Veolia and Suez
- Evaluated internal ML infrastructure against Google Vertex AI AutoML and presented improvement suggestions to Google

AWARDS

Winner of MIT x AI21Labs Hackathon on agentic LLMs	2024
ETH SEMP Scholar – CHF 6k	2023 – 2024
Swiss National Science Foundation BRIDGE – CHF 130k	2023 – 2024
Venture Kick Research Fund – CHF 150k	2023 – 2024
EPFL Blaze & Ignition Grants – CHF 40k	2023
UK Research & Innovation Fellowship Beneficiary	2021 – 2022

SKILLS & INTERESTS

- **Languages:** French & English (Native), German (B2), Chinese (HSK4)
- **Software skills:** Python, MATLAB, ROS
- **Volunteering activities:** Race Against Hunger, Food Bank, Bake-Sale sessions
- **Interests:** Travelling, Environmental & Biomedical technologies, Collective sports