

Mikael Yeghiazaryan

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Research Assistant at University of Illinois Urbana-Champaign

EDUCATION

University of Oxford

Oxford, UK

Bachelor & Master of Engineering Science

October 2018 – June 2022

- Graduated with a 1st Class Honours; ranked 15 out of 159
- Received the Swire Scholarship for excellent academic performance

“Quantum” Gymnasium

Yerevan, Armenia

International Baccalaureate Diploma (High School)

September 2016 – July 2018

- Overall IB score: 41/45

RESEARCH PROJECTS

Safe Autonomous Unmanned Aerial System | UIUC

July 2024 – present

- Supervision: Dr. Naira Hovakimyan.
- Description: Our work focuses on implementing an autonomous unmanned aerial system that is capable of safe operation in scenarios where a serious system fault occurs, e.g. GPS signal is lost or an actuator is stuck. My responsibility is to develop a simulator for air taxis in cluttered urban environments using CARLA.
- Skills: Simulation (CARLA, Gazebo), ROS.

Augmenting Aerial Imagery using Vision-Language Models | CMU

September 2023 – present

- Supervision: Dr. Fernando De la Torre and Dr. Jessica Hodgins.
- Description: Our goal is to enhance aerial/satellite imagery employed as training data for vehicle detection. Our primary focus revolves around leveraging advanced text-to-image models, such as Stable Diffusion, to generate and augment data in a controllable manner. We are also running adversarial attacks on these generative models to assess their stability, and explain detector performance using language.
- Skills: diffusion models, generative AI, vision-language models, large language models, prompt engineering.

Practical Adversarial Attacks on Aerial Imagery | CMU

September 2022 – December 2023

- Supervision: Dr. Fernando De la Torre and Dr. Jessica Hodgins.
- Description: This project focused on devising practical adversarial attacks against aerial vehicle detectors.
- Skills: adversarial attacks, 3D differentiable rendering (PyTorch3D, Kaolin), synthetic data generation, Deep Neural Networks for object detection, Blender, teamwork, presentation skills.

4th year Master Thesis Project | University of Oxford

September 2021 – June 2022

- Title: Learning generalizable keypoints for object pose estimation.
- Supervision: Dr. Joao Henriques and Dr. Dylan Campbell (Visual Geometry Group, University of Oxford).
- Description: I worked on creating a novel approach for unseen object pose estimation using general features and low-resolution CAD models of unseen objects.
- Skills: differentiable rendering (PyTorch3D), 3D geometry, work ethics.

3rd year Group Project | University of Oxford

September 2020 – May 2021

- Title: Formula Student Electric Vehicle (EV) Race Car Design.
- Supervision: Dr. Dan Rogers (University of Oxford).
- Description: I worked on the design of the electronics and control systems for a Formula Student EV race car.

MIT GTL Project

June 2016 – August 2016

- Title: Movie Feedback Classification Using the Perceptron Algorithm.
- Supervision: Hayk Saribekyan (MIT student at the time of the project).
- Description: I trained a perceptron classifier which classified movie reviews (given as a raw text input) either positive or negative, and managed to achieve 96% accuracy on the test dataset.

WORK EXPERIENCE

Research Assistant

Advanced Controls Research Laboratory, University of Illinois Urbana-Champaign

- Supervised by Dr. Naira Hovakimyan.

Urbana-Champaign, IL, USA

July 2024 – present

Research Assistant

Robotics Institute, Carnegie Mellon University

- Supervised by Dr. Fernando De La Torre and Dr. Jessica Hodgins.

Pittsburgh, PA, USA

September 2022 – July 2024

Research Assistant

Engineering Department, University of Oxford

- Supervised by Dr. Min Chen (University of Oxford).
- Assembled and annotated a dataset of 3D images.

Oxford, UK

November 2021 – January 2022

Research Intern

Oxford Robotics Institute, University of Oxford

- Supervised by Dr. Maurice Fallon (ORI).
- Integrated a 3D semantic segmentation model into a quadruped robot as a ROS (robot operating system) node.

Oxford, UK

June 2021 – August 2021

HONOURS AND AWARDS

1st Class Honours

University of Oxford

- I achieved and graduated with 1st Class Honours (equivalent to 4.0 GPA) in all years of examinations at the University of Oxford.
- Awarded the Swire Scholarship for exceptional academic performance at my college (University College Oxford).

Oxford, UK

October 2018 – June 2022

Honorable mention in The International Physics Olympiad

International Physics Olympiad, 2017

Jogjakarta, Indonesia

July 2017

Silver medal in The International Zhautykov Olympiad (Physics)

International Zhautykov Olympiad, 2017

Almaty, Kazakhstan

January 2017

COMMUNITY & LEADERSHIP

Secretary and President of the Oxford University Armenian Society

Oxford University Armenian Society (OUAS)

- I set up events for the society members.
- I engaged in the promotion of the society's events at the university level.

Oxford, UK

October 2020 – June 2022

Lecturer of Engineering Science

"Quantum" Gymnasium

- I lectured engineering of electronics at my alma mater's summer camp for high school students.

Yerevan, Armenia

August 2019

President of the Experimental Physics Club

"Quantum" Gymnasium

- I founded a club for conducting experiments in physics and helped other students with their assignments.

Yerevan, Armenia

October 2016 – March 2018

SKILLS

Programming Languages: Python, C/C++, Matlab.

Machine Learning & AI: Pytorch, Natural Language Processing, CLIP, Diffusion Models, Tensorflow, Keras.

3D Computer Vision & Graphics: PyTorch3D, Blender, CARLA, PyBullet, Kaolin.

Operating Systems: skillful in Linux (Ubuntu 20.04).

Other: Git, Prompt Engineering, ROS, Arduino, Raspberry Pi 4, Flask, AWS, Anaconda, L^AT_EX, PostgreSQL.

Research: critical thinking, teamwork, communication and presentation skills, work ethics.

MISCELLANEOUS

Languages: Armenian (native), Russian (native), Belarusian (native), English (fluent), Spanish (beginner), German (beginner), Arabic (beginner).

Music: Playing the violin since age of 6, laureate of international contests, invited performer at Vladimir Spivakov's festival at age 10.

Chess: Achieved Class A Elo ranking at age 12, now playing recreationally (Lichess ID Michael.Yeghiazaryan).