# Mikael Yeghiazaryan

myeghiaz@illinois.edu | LinkedIn | GitHub
Research Assistant at the 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 & Publications

**IEEE International Conference on Image Processing (ICIP) 2025** — September 2025
- Title: *Texture- and Shape-based Adversarial Attacks for Overhead Image Vehicle Detection.*
- Authors: Mikael Yeghiazaryan, Sai Abhishek Siddhartha Namburu, Emily Kim, Stanislav Panev, Celso de Melo, Fernando De la Torre, Jessica Hodgins.
- Description: Proposed and evaluated practical adversarial attack strategies on aerial vehicle detectors, balancing attack effectiveness with real-world texture and shape constraints.

**AIAA Aviation Forum and Exposition 2025** — July 2025
- Title: *AirTaxiSim: A Simulator for Autonomous Air Taxis.*
- Authors: Mikael Yeghiazaryan, Ayoosh Bansal, Hyung-Jin Yoon, Duo Wang, Petros Voulgaris, Naira Hovakimyan, Lui Sha.
- Description: Developed AirTaxiSim, a high-fidelity simulation framework to evaluate and benchmark autonomous air taxi operations in complex urban environments.

**AIAA SciTech Forum and Exposition 2025** — January 2025
- Title: *Verification and Validation of a Vision-Based Landing System for Autonomous VTOL Air Taxis.*
- Authors: Ayoosh Bansal*, Duo Wang*, Mikael Yeghiazaryan*, Yangge Li, Chuyuan Tao, Hyung-Jin Yoon, Prateek Arora, Christos Papachristos, Petros Voulgaris, Sayan Mitra, Lui Sha, Naira Hovakimyan. (* – equal contribution)
- Description: Developed a verification and validation framework using formal methods and high-fidelity simulation to assess the safety of a vision-based landing system for autonomous VTOL air taxis in cluttered urban environments.

**Augmenting Aerial Imagery using Vision-Language Models** | *CMU* — September 2023 – December 2024
- 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.

**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** — Urbana-Champaign, IL, USA
*Advanced Controls Research Laboratory, University of Illinois Urbana-Champaign* — *July 2024 – present*
- Supervised by Dr. Naira Hovakimyan.

**Research Assistant** — Pittsburgh, PA, USA
*Robotics Institute, Carnegie Mellon University* — *September 2022 – July 2024*
- Supervised by Dr. Fernando De La Torre and Dr. Jessica Hodgins.

**Research Assistant** — Oxford, UK
*Engineering Department, University of Oxford* — *November 2021 — January 2022*
- Supervised by Dr. Min Chen (University of Oxford).
- Assembled and annotated a dataset of 3D images.

**Research Intern** — Oxford, UK
*Oxford Robotics Institute, University of Oxford* — *June 2021 — August 2021*
- Supervised by Dr. Maurice Fallon (ORI).
- Integrated a 3D semantic segmentation model into a quadruped robot as a ROS (robot operating system) node.

## Honours and Awards

**1st Class Honours** — Oxford, UK
*University of Oxford* — *October 2018 – June 2022*
- 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).

**Honorable mention in The International Physics Olympiad** — Jogjakarta, Indonesia
*International Physics Olympiad, 2017* — *July 2017*

**Silver medal in The International Zhautykov Olympiad (Physics)** — Almaty, Kazakhstan
*International Zhautykov Olympiad, 2017* — *January 2017*

## Community & Leadership

**Secretary and President of the Oxford University Armenian Society** — Oxford, UK
*Oxford University Armenian Society (OUAS)* — *October 2020 – June 2022*
- I set up events for the society members.
- I engaged in the promotion of the society's events at the university level.

**Lecturer of Engineering Science** — Yerevan, Armenia
*"Quantum" Gymnasium* — *August 2019*
- I lectured engineering of electronics at my alma mater's summer camp for high school students.

**President of the Experimental Physics Club** — Yerevan, Armenia
*"Quantum" Gymnasium* — *October 2016 – March 2018*
- I founded a club for conducting experiments in physics and helped other students with their assignments.

## Skills

**Programming Languages**: Python, C/C++, Matlab.
**ML & AI**: PyTorch, Natural Language Processing, Transformers, CLIP, Diffusion Models, Tensorflow, Keras, scikit-learn, Pandas.
**Computer Vision & Graphics**: OpenCV, Pillow (PIL), NumPy, PyTorch3D, Blender, CARLA, PyBullet, Kaolin.
**Operating Systems**: skillful in Linux (Ubuntu 20.04).
**Other**: Git, Prompt Engineering, ROS, Arduino, Raspberry Pi, Flask, AWS, Anaconda, LaTeX, Docker, PostgreSQL.
**Research**: critical thinking, teamwork, communication and presentation skills, work ethics, clean coding.

## 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).