Angelos Mavrogiannis

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Education

University of Maryland, College Park (UMD)   Aug 2020 – Summer 2025 (exp.)
Doctor of Philosophy (PhD), Computer Science
Thesis: "Translating Natural Language to Visually Grounded Verifiable Action Plans"
Advisor: Prof. Yiannis Aloimonos

University of Maryland, College Park (UMD)   Dec 2023
Master of Science (MS), Computer Science
Coursework: Robotics, Trustworthy ML, Computer Vision, Decision-Making for Robotics, Deep Learning, Computational Linguistics, Interactive Data Analytics, HCI
GPA: 3.74/4.00

Carnegie Mellon University (CMU)   May 2020
Master of Science (MS), Mechanical Engineering
Thesis: "Human Driver Behavior Classification from Partial Trajectory Observation"
Advisor: Prof. Changliu Liu
Selected Coursework: Advanced Control & Reinforcement Learning, Deep Learning, Mechanics of Manipulation, Machine Learning, Robot Design & Experimentation, Linear Control Systems, Engineering Computation
GPA: 3.92/4.00

University of Patras (UoP)   July 2017
Bachelor of Science (BS) & Master of Engineering (MEng), Mechanical Engineering
Concentration: Mechanical Design & Manufacturing
Thesis: "Environment Development for Implementing Design Optimization Using Parsers and Genetic Algorithms"
Advisor: Prof. Argyris Dentsoras
GPA: 8.03/10.00 (top 10% in a class of 150 students)

Honors & Awards

ICRA@40 Travel Grant   2024
IEEE Robotics and Automation Society
NSF AccelNet Grant   2024
NeuroPAC Project: Neuromorphic Perception, Action, and Cognition

Scholarship for 4ᵗʰ Summer School on Social Human-Robot Interaction 2023
IROS Student and Developing Countries Travel Award 2022
IEEE Robotics and Automation Society
Jacob K. Goldhaber Travel Grant 2022
International Conference Student Support Award (ICSSA) 2022
Computer Science Department Travel Grant 2022
Department of Computer Science, The Graduate School, University of Maryland
Gerondelis Graduate Study Scholarship 2022
Gerondelis Foundation
Dean's Fellowship 2020-2022
Department of Computer Science, University of Maryland
Fulbright Scholarship 2018-2020
Fulbright Foundation
Carnegie Mellon Mechanical Engineering MS Research Symposium Award 2020
Department of Mechanical Engineering, Carnegie Mellon University
Duke Mech. Eng. & Materials Science Graduate Scholarship (declined) 2018
Duke University
Andreas Mentzelopoulos Scholarship 2018-2020
University of Patras
Harry D. Triantafillu Scholarship 2018
Harry D. Triantafillu Scholarship Fund - Institute of International Education

Research Experience

Graduate Research Assistant
Department of Computer Science, University of Maryland

Perception and Robotics Group (PI: Prof. Yiannis Aloimonos) January 2022 – Present
- Research in the intersection of robotics and NLP (RoboNLP).
- Discovering Object Attributes by Prompting Large Language Models with Perception-Action APIs (paper: https://arxiv.org/abs/2409.15505, accepted for publication at ICRA 2025 in Atlanta, Georgia, USA, poster presented at ICRA@40 in Rotterdam, Netherlands)
- Cook2LTL: Translating Cooking Recipes to LTL Formulae using Large Language Models (paper: https://ieeexplore.ieee.org/document/10611086, presented at ICRA 2024 in Yokohama, Japan)

Gamma Group (PI: Prof. Dinesh Manocha)   Sept 2020 – December 2021
- B-GAP: Behavior-Rich Simulation and Navigation for Autonomous Driving (RA-L 2022 letter: https://ieeexplore.ieee.org/document/9716825, presented at IROS 2022 in Kyoto, Japan)

Graduate Research Assistant   Jan 2019 – May 2020
The Robotics Institute, Carnegie Mellon University
Intelligent Control Lab (PI: Prof. Changliu Liu)

- Developed a machine learning framework (PyTorch, Scikit-Learn) for classifying human driver behaviors based on partial trajectory observations and applied it to vehicle trajectory prediction.
- Designed and created a data-driven simulator on Python for visualizing vehicle trajectories.
- Master thesis available at: https://www.researchgate.net/publication/345780499_Human_Driver_Behavior_Classification_from_Partial_Trajectory_Observation

Graduate Research Assistant   Sept 2018 – Dec 2018
Department of Mechanical Engineering, Carnegie Mellon University
Computational Engineering and Robotics Lab (PI: Prof. Kenji Shimada)
- Research on the design and control of an underwater, hull-cleaning robot (code in C++, communications through ROS, project funded by Tsuneishi Shipbuilding Co. Ltd and supervised by Prof. Kenji Shimada).

Undergraduate Research Assistant   Nov 2016 – July 2017
Mechanical Engineering and Aeronautics Department, University of Patras
Machine Design Laboratory (PI: Prof. Argyris Dentsoras)
- Developed a software tool (Visual Basic) for automatic parsing of optimization problems from mathematical expressions into numerical code and solving them using Genetic Algorithms (Diploma Thesis project).
- Demonstrated the efficacy of the tool in robotic grasping applications and specifically via minimizing the forces applied onto an object grasped by a robot arm.

Teaching Experience

Teaching Assistant
Department of Computer Science, University of Maryland, College Park

CMSC 122: Intro to Computer Programming via the Web Spring 2023, Fall 2023-2024
Undergraduate Course, taught by Jen Manly, Pedram Sadeghian
- Holding weekly office hours and grading quizzes, projects, and exams.

CMSC 131: Object-Oriented Programming I (Java)   Spring 2024
Undergraduate Course, taught by Pedram Sadeghian
- Held weekly office hours and graded assignments and exams.

CMSC 426: Computer Vision   Fall 2022
Undergraduate Course, taught by Prof. Yiannis Aloimonos
- Held weekly office hours and graded projects and exams.

CMSC 216: Introduction to Computer Systems   Spring 2022
Undergraduate Course, taught by Larry Herman

- Taught weekly lectures on C programming, UNIX process control, and Assembly language.
- Held weekly office hours and offered assistance to a class of over 500 students.

CMSC 106: Introduction to C Programming   Fall 2021
Undergraduate Course, taught by Prof. Jan Plane
- Hosted weekly lab sessions on C programming in a UNIX environment.
- Provided debugging assistance to a class of more than 50 students.
- Held weekly office hours, created and graded assignments and projects.

Course Assistant
Department of Mechanical Engineering, Carnegie Mellon University

24-775: Robot Design & Experimentation   Spring 2020
Graduate Course, taught by Prof. Aaron Johnson
- Advised students on robot design projects, organized and supervised group meetings and graded assignments and projects.

24-281: Introduction to Scientific Computing   Spring 2019, Fall 2019
Undergraduate/Graduate Course, taught by Dr. Zhenguo Nie, Dr. Hugo Penelas
- Delivered MATLAB recitations, held weekly office hours, created and graded weekly assignments.

24-686: Advanced Mechanical Design   Fall 2018
Graduate Course, taught by Prof. Rahul Panat
- Offered SolidWorks recitations, held weekly office hours and designed/graded assignments and projects.

Internships

Artificial Intelligence – Artificial Intelligence Engineer Intern   Summer 2024
LinkedIn Corporation, San Francisco, California
- Orchestrated a vLLM- and HuggingFace-powered batch inference pipeline to generate LLM member and ad campaign embeddings.
- Integrated the embeddings as input features into a two-tower recommendation model for embedding-based retrieval.
- Trained the model towards expanding the target audience of a campaign and outperformed the existing baseline in production.

Artificial Intelligence – Machine Learning Engineer Intern   Summer 2023
LinkedIn Corporation, Mountain View, California
- Fine-tuned state-of-the-art open-source Large Language Models towards optimizing LinkedIn's audience targeting pipeline.
- Outperformed the existing audience targeting module that was used in production at that time.

Artificial Intelligence – Machine Learning Engineer Intern   Summer 2022

LinkedIn Corporation, Mountain View, California

- Developed a Real-Time Bidding environment for second-price auctions on OpenAI gym.
- Modeled a multi-constraint bidding problem for ad optimization using a Constrained Markov Decision Process (CMDP).
- Trained a Deep Reinforcement Learning policy that can outperform the company's currently used automatic bidding policy.

Jr. Technical Superintendent   Summer 2012, Summer 2013

Euronav Ship Management Hellas Ltd, Athens, Greece

- Interned in the technical department of the company and assisted with various day-to-day tasks.
- Reviewed weekly fleet reports to analyze and optimize on-ship oil and energy consumption.

Skills

Programming

Python, C/C++, MATLAB, SQL, Scala, Visual Basic, Fortran

Machine Learning Libraries/Toolkits

Huggingface, spaCy, Tensorflow, PyTorch, OpenCV, Scikit-Learn, Open AI Gym

Engineering Software

ROS (Robot Operating System), AI2-THOR, Gazebo, Solidworks, Catia, AutoCAD

Technologies

Linux, Git, Apache Spark, Hadoop

Languages

English (Fluent, TOEFL 115/120, CPE University of Cambridge 2008)
French (Intermediate, DALF C2 2010)
Greek (Native)

Teamwork & Class Projects

Evaluating the Fairness of Diffusion-based Face Generation   Fall 2023

CMSC 848I: Trustworthy Machine Learning, taught by Hal Daumé III, UMD

- Designed a pilot study that mines information about users' facial features by asking them LLM-generated questions.
- Evaluated the fairness of a diffusion model on face reconstruction based on the information extracted during the pilot study.

VR-Integrated Real-Time Racetrack Simulator   Spring 2023
CMSC 730: Interactive Technologies in HCI, taught by Huaishu Peng, UMD
- Proposed and led a group project on building a 3D-printed chessboard-resembling racetrack and an interactive system that converts it to a VR-simulated racing environment.
- Implemented the entire computer vision module, tracking the position and orientation of the pieces using ArUco markers and mapping them to poses and ego-vehicle control commands in a simulated racetrack in Unity.

Predictive Modeling Using Linguistic Signal for Suicidality   Spring 2021
CMSC 723: Computational Linguistics, taught by Jordan Boyd-Graber, P. Resnik, UMD
- Proposed a modified Hierarchical Attention Network architecture to assess the potential suicide risk of reddit users based on their post history.
- Extracted post-level features based on users' emotional states and tuned a Latent Dirichlet Allocation (LDA) model to retrieve meaningful subreddit clusters.

News Scraper (Full Disclosure Project)   Spring 2021
CMSC 828D: Interactive Data Analytics, taught by Leilani Battle, UMD
- Collaborated with a team of students to develop an application that continuously scrapes the web for articles related to potential police misconduct.
- Developed an NLP-based algorithm that assigns a probability score to scraped articles based on their potential indication of police misconduct.

Automatic Parking using Reinforcement Learning   Fall 2020
CSMC 828W: Foundations of Deep Learning, taught by Soheil Feizi, UMD
- Presented a Curriculum Learning-based setup for the efficient training of a Reinforcement Learning policy on autonomous parking.
- Demonstrated the benefits of the proposed approach in parking environments of varying traffic density on an OpenAI gym-based simulator.

Reinforcement Learning-based Object Placement on Small Surfaces   Fall 2020
CMSC 818B: Decision-Making for Robotics, taught by Pratap Tokekar, UMD
- Realigned a Reinforcement Learning-based Pick-and-Place approach to an approximation of object stacking upon small surfaces.

Sentiment Analysis on Audiovisual Speech Samples   Spring 2020
24-789: Deep Learning, taught by Amir Barati Farimani, CMU
- Collaborated with a team of students to develop a multi-modal deep learning framework for extracting the sentiment of a short audiovisual speech sample.
- Implemented a deep neural network which receives text as input and outputs the polarity of the given text (positive/negative sentiment).

Autonomous Vehicle Controller Design   Fall 2019
24-677: Linear Control Systems, taught by Ding Zhao, CMU

- Designed a lateral and a longitudinal controller to track the route of an autonomous vehicle around the CMU campus.
- Investigated various methods for improved performance (PID, pole placement, Discrete Time Infinite Horizon LQR) and used Kalman Filter for noise filtering.

Bioinspired Robot Design   Spring 2019

24-775: Robot Design & Experimentation, taught by Aaron Johnson, CMU
- Collaborated with a team of students to design and manufacture an underwater penguin-inspired robot.
- Incorporated a ball-and-socket motion transmission mechanism for the movement of the flippers.
- Designed a control system using Arduino microcontroller and tested the robot in underwater environments.

Game Design   Fall 2018

24-780: Engineering Computation, taught by Nestor Gomez, CMU
- Implemented applications with 3D graphics and audio programming, using C++ and the openGL library.
- Orchestrated a team project on the development of an interactive entertainment software package (a fighting game).

Manipulation Project   Fall 2018

16-741: Mechanics of Manipulation, taught by Matt Mason, CMU
- Collected a synthetic dataset of manipulator postures and object poses in OpenAI Gym.
- Trained a multilayer perceptron in order to map changes in hand pose to object displacements.
- Modified the OpenAI Gym simulator to demonstrate the predicted object pose and validated the method on occluded object tracking problems.

Computational Robotics Project   Fall 2016

MEA-KY3: Robotics, taught by Nikos Aspragathos, UoP
- Developed forward and inverse kinematics software in Matlab for a KUKA KR 6 R700 sixx WP industrial robot.
- Applied the framework to trajectory planning problems and visualized the joint and end-effector trajectories.

Extracurricular Coursework

The Machine Learning Summer School (MLSS) in Okinawa   March 2024

Okinawa Institute of Science and Technology (OIST), Riken AIP

4th Summer School on Social Human-Robot Interaction   Sept 2023

Human Interactivity and Language Lab, IEEE Robotics and Automation Society

DISC Summer School 2021 for Planning, Learning and Control for Multi-Robot and Multi-Agent Systems   June 2021
Dutch Institute of Systems and Control

Robotics & AI Summer School   June 2021
IRI - Institut de Robòtica i Informàtica industrial, CSIC-UPC

3rd ACM Summer School in Data Science   July 2019
Association for Computing Machinery

Outreach

Paper Reviewing
- IEEE TPAMI   Sept 2024
- IEEE ICRA 2025   Sept 2024
- IEEE ICRA 2024   Oct 2023
- IEEE IROS 2023   March 2023

Intelligent Control Lab Tour, Carnegie Mellon University   May 2019
- Presented the lab equipment and gave a brief talk for a group of students from Choate Rosemary Hall.

Makerspace and Machine-Shop Tour, Carnegie Mellon University   December 2018
- Gave a tour of the makerspace and the machine-shop to a group of CMU kindergarten kids.

F1 in Schools, 4x4 in Schools, Athens, Greece   May 2018
- Constructed a set of different racetracks and supervised the F1 in Schools STEM Challenge.
- Collaborated with a team of engineers to inspect and validate F1 and 4x4 student-designed vehicles.