# Angelos Mavrogiannis

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https://angmavrogiannis.github.io
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## Education

**Carnegie Mellon University (CMU)** Aug 2018 – May 2020 (exp.)
Master of Science (M.S.) in Mechanical Engineering
GPA: 4.00/.400
Coursework: Introduction to Machine Learning, Robot Design & Experimentation, Linear Control Systems, Mechanics of Manipulation, Engineering Computation

**University of Patras (UoP)** July 2017
Diploma, Mechanical Engineering and Aeronautics
Concentration: Mechanical Design & Control
Thesis title: "Environment Development for Implementing Design Optimization Using Parsers and Genetic Algorithms"
Advisor: Argyris Dentsoras
GPA: 8.03/10.00 (top 10%)

## Honors & Awards

**Fulbright Scholarship**, Fulbright Student Program, $18,500 2018
**Duke MEMS Graduate Scholarship,** Duke University, $30,000 2018
**Andreas Mentzelopoulos Scholarship**, University of Patras, $60,000 2018
**Harry D. Triantafillu Scholarship,** Institute of International Education, $3,000 2018

## Research Experience

**Graduate Research Assistant**, January 2019 – Present
The Robotics Institute, Carnegie Mellon University
Intelligent Control Lab (PI: Prof. Changliu Liu)

- Trained recurrent neural networks (PyTorch) for intention and trajectory prediction on autonomous driving applications based on NGSIM datasets.
- Developed a MATLAB framework for visualization and comparison of ground truth and predicted trajectories of vehicles in highway and intersection driving scenarios.
- Conducted a survey on the comparison of state-of-the-art methods used for vehicle behavior prediction.

**Graduate Research Assistant**, Sept 2018 – January 2019
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 Mechanical Engineering, Carnegie Mellon University
24-281: Introduction to Scientific Computing Spring 2019, Fall 2019

- Delivered MATLAB recitations, held weekly office hours, created and graded weekly assignments.

24-686: Advanced Mechanical Design Fall 2018

- Offered SolidWorks recitations, held weekly office hours and designed/graded assignments and projects.

## Skills

**Programming**
C/C++, Python, MATLAB, Visual Basic, Fortran, SQL, OpenGL
**Machine Learning Libraries/Toolkits**
PyTorch, Open AI Gym
**Engineering Software**
Solidworks, Catia, AutoCAD
**Technologies**
Linux, ROS, Git
**Languages**
English (Fluent, CPE, University of Cambridge 2008)
French (Intermediate, DALF C2 2010)
Greek (Native)

## Team Work & Class Projects

**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.

## Internships

**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.

## Outreach

**Intelligent Control Lab Tour**, Carnegie Mellon University May 2019

- Presented the lab 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 race tracks and supervised the F1 in Schools STEM Challenge.
- Collaborated with a team of engineers to inspect and validate F1 and 4x4 student-designed vehicles.