

CAMERON P. MEHLMAN

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EDUCATION

DECEMBER 2022

COLUMBIA UNIVERSITY, M.S. MECHANICAL ENGINEERING

Concentration: Robotics and Controls

GPA: 3.92

Relevant Projects:

Soft-Body Physics Simulator: As part of a final project, I wrote my own physics simulator designed to simulate soft bodies consisting of complex spring mass damper systems in C++

Robotic AI Face: see below

IHM: see below

MAY 2021

RENSELAER POLYTECHNIC INSTITUTE, B.S. AERONAUTICAL ENGINEERING (MAGNA CUM LAUDE)

Major: Aeronautical Engineering

GPA: 3.88

Team Experience:

Drone Design: Designed and built the communications system used on a drone capable of applying anti-corrosive spray to targeted objects for structure maintenance applications.

Capstone Project: Designed a proof of concept for the orbital mechanics and attitude determination and control system of an orbiter with the mission of traveling to Enceladus (a moon of Saturn).

Leadership & Activities:

Pi Lambda Phi (brother), Pi Lambda Phi Judiciary Board (elected representative), Pi Lambda Phi Scholarship Chair (elected position, four terms), Tau Beta Pi Treasurer (elected position, two terms), RPI Ski Team

Honors:

Sigma Gamma Tau Aerospace Engineering Honor Society, Rensselaer Leadership Award (partial merit scholarship), Deans Honors List, Tau Beta Pi Engineering Honor Society

RESEARCH

MAY 2022 – PRESENT

DEEP REINFORCEMENT LEARNING RESEARCH, ROAM LAB (COLUMBIA UNIVERSITY)

In the Robotic Manipulation and Mobility Lab (ROAM Lab) at Columbia University, I am working on a project investigating the effects on Reinforcement Learning when using a sub-optimal expert to assist with exploration. My specific contributions include investigating the benefits of using an analytical controller as a sub optimal expert to help off-policy algorithms such as SAC learn to better explore difficult environments with sparse reward functions.

SEPTEMBER 2021 – MAY 2022

ROBOTICS DESIGN AND CONTROLL RESEARCH, CREATIVE MACHINES LAB (COLUMBIA UNIVERSITY)

In the Creative Machines Lab at Columbia University, I worked on a project involving the creation of an animatronic human face, capable of mimicking facial expressions through the use of AI. I personally have contributed to the design and control of the mouth and jaw module (including simulating the inverse kinematics of the system, and assisting in developing a supervised learning method for control). I the group I worked with to publish this winter.

MARCH 2019 – MAY 2021

ORBITAL MECHANICS RESEARCH, RENSSELAER POLYTECHNIC INSTITUTE

Working under Professor Kurt Anderson at RPI, I conducted research involving the orbital mechanics of CubeSat satellites designed to rendezvous with and de-orbit space debris in low Earth orbit. I and co-authors William Hudnut and Dr. Kurt Anderson published results of this research, during the summer of 2020. I also heavily revised a former graduate student's master's thesis which was a Matlab program designed to pre-process TLE data using APIs.

EMPLOYMENT

SEPTEMBER 2022 – DECEMBER 2022

COURSE ASSISTANT, COLUMBIA UNIVERSITY

Responsibilities included grading exams and homework's, as well as proctoring exams.

JUNE 2021 – AUGUST 2021

ENGINEERING INTERN, MORRIS TOWNSHIP ENGINEERING DEPARTMENT

Responsibilities included overseeing and inspecting construction sites as well as reporting to my supervisor issues regarding safety and structural regulatory compliance.

MARCH 2016 – JULY 2018

GOLF CADDY, ESSEX COUNTY COUNTRY CLUB

NOVEMBER 2015 – AUGUST 2016

TUTOR, MONTCLAIR YMCA

SKILLS

- Experience with Virtual Machines (SSH Servers)
- C++/C
- Python
- Experience developing on GitHub
- 3D printing, Laser Cutter, etc.
- Java
- Matlab
- Solidworks

PUBLICATIONS

A Non-Hohmann Method for Orbital Element Database Pre-Processing

William O. S. Hudnut, Cameron P. Mehlman, Kurt S. Anderson, Ph.D.

August 2020, Small Satellite Conference