

NATHANIEL KALANTAR

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EDUCATION

University of Michigan, Ann Arbor, MI

B.S.E. Computer Engineering [GPA: 4.0/4.0]

September 2019 – Present

Graduating: December 2022

Washtenaw Community College, Ann Arbor, MI

June 2020 – August 2020

SKILLS

Software Engineering: C/C++, Python, Git, Microcontrollers, MATLAB, Object Oriented Programming, Linux CLI

Electrical Engineering: PCB Schematic Design, KiCad, Oscilloscopes, Multimeters, SPI, LTSpice

Communication: Leadership, Technical Writing, Project Management, Documentation, Presentations

PROJECTS

Michigan Aeronautical Science Association: U of M Rocketry Team, Ann Arbor, MI

January 2020 – Present

Avionics Sub-team

- Abstracted SPI commands, status registers, and memory management behind a simple file pointer interface while designing a flash memory firmware library in C on an STM32 microcontroller
- Implemented temperature calibration and reading converted sensor data over SPI in a pressure altimeter firmware library in C on an STM32 microcontroller
- Selected components and designed schematics for a printed circuit board in KiCad, connecting a variety of sensors and actuators to a microcontroller for parachute deployment

RC Helium Blimp Project: ENGR 100 – Intro to Aerospace Engineering

September 2019 – December 2019

- Constructed a seven-foot helium blimp with a team that placed 1st out of 12 teams in speed and mobility competitions
- Organized team members over eight weeks by communicating frequently, scheduling meetings, and delegating tasks based on team members' interests and availability
- Programmed flight controls on an Arduino that read inputs from four radio channels to power the blimp's motors

RESEARCH

MITEE CubeSat Research Team, Ann Arbor, MI

January 2020 – Present

Orbits, Attitude Determination, and Control Sub-team

- Researched sensor fusion and data filtering to improve sensor accuracy for attitude and position determination
- Studied methods of tri-axial attitude determination by combining the signal to noise ratio of a GPS patch antenna with magnetometer readings, allowing for attitude measurements to supplement sun sensors

Michigan State University St. Andrews, Midland, MI

June 2019 – August 2019

Computer Science Research Intern

June 2018 – August 2018

- Automated an RC car to drive along a track based on camera training data from human-controlled driving, using open source machine learning libraries to associate camera input to servo and motor output
- Tracked hidden game pieces and determined optimal moves for a strategic board game with an automated opponent written in Python that utilized Bayesian inference and Monte Carlo simulations

ACTIVITIES

University of Michigan STEM Society: Computer Science Outreach, Ann Arbor, MI

November 2019

- Taught coding basics in Scratch to students from underfunded high schools during an on-campus outreach event

FIRST Robotics Competition Team #2619, Midland, MI

September 2015 – August 2019

- Designed a computer vision system using OpenCV on a JeVois camera to identify reflective targets on goals and determine their position and orientation relative to the robot
- Developed a GUI that allowed the robot's operators to plan and draw autonomous paths for the robot to follow

HONORS & CERTIFICATIONS

Amateur Radio Technician License

August 2020

University of Michigan College of Engineering Dean's Honor List

December 2019

Eagle Scout – Boy Scouts of America Troop 763, Midland, MI

November 2018