

# Andrew Scheffer

drewskis@umich.edu • (989) 750-4753 • 1770 Broadway St., Ann Arbor, MI

## Education

### University of Michigan

Ann Arbor, MI

*Masters of Engineering: Computer Engineering*

May 2024

*Bachelor of Science: Computer Science and Engineering (Minor: Physics)*

May 2023

GPA: 3.97/4.00

Relevant Coursework: Operating Systems, Advanced Autonomous Robotics, Advanced Computer Vision, Natural Language Processing, Data Structures and Algorithms, Computer Organization, Statistics

## Work/Research Experience

### NASA Jet Propulsion Laboratory

Pasadena, CA

*Robotics Simulation Intern*

May 2023 - Present

- Deployed software-in-the-loop simulation features relating to downlink command parsing, rover kinematic state, and rover collision modeling for Mars 2020 and Mars Sample Return missions
- Developed a custom deterministic multithreading library in C++ from scratch for use in the Mars Sample Return surface simulation stack

### Garmin Internship

Olathe, KS

*Software Engineering Intern*

May 2022 - Aug 2022

- Formulated both modular and fuzz testing schemes in an effort to rigorously certify a new graphics driver to be used in Garmin's aviation products
- Identified and developed significant modifications to the automated testing framework by creating new testing tools using libclang
- Developed an entire graphics pipeline in C++ using the Vulkan API

### MIT Proto Ventures Healthcare Research

Virtual

*Researcher - Luis Soenskin*

June 2020 - Present

- Successfully preprocessed hundreds of thousands of images of dermatological diseases employing computer vision algorithms in Python and exported trained model to iOS app with Swift
- Spearheaded the development of a dataset that differentiates both body parts and Fitzpatrick skin types in images to be used by telehealth systems to provide more equitable care to underrepresented groups
- Implemented computer vision algorithms such as foreground segmentation, body pose classification, feature matching, and noise filtering to quickly and efficiently preprocess image data

## Project Experience

### Michigan Autonomous Aerial Vehicles (MAAV)

Ann Arbor, MI

*Software Team Lead*

September 2020 - Present

- Responsible for designing and implementing a completely autonomous software stack for a quadrotor using ROS integrated with the PX4 flight controller
- Recent projects include designing a Docker environment to support a seamless development environment, implementing a depth camera driver that publishes data to ROS, and writing a waypoint generator script
- Manage the development and integration of path planning, localization, and computer vision algorithms
- Teach new members fundamentals of robotics and software development (version control, forward/inverse kinematics, ROS, etc)

### C++ Chess Engine

Ann Arbor, MI

*Primary Contributor*

November 2020 - Present

- Created a 1-player C++ chess engine from scratch using SDL and OpenGL
- Implemented an alpha-beta pruning search technique to quickly generate and evaluate moves

### AR Architecture App

Ann Arbor, MI

*App Developer*

May 2021 - August 2021

- Researched, designed, and programmed an iOS app that allows users to scan white architectural models and make .obj files using 3D feature point placement.
- Worked with EIPC at UofM to create photogrammetry solutions for architectural modeling

## Relevant Activities

Michigan Hackers, iOS Team Lead

Sept 2020 - Aug 2023