ARTHUR LOVEKIN

arthurlovekin@gmail.com | https://arthurlovekin.com

Education

University of Michigan, Ann Arbor (UMich) *August 2022 - December 2023*

- MS in Robotics, December 2023, **GPA 3.93/4.00**. Awarded the Ehrenberg Fellowship ($20,000 value)

University of California, Los Angeles (UCLA) *September 2018 - June 2022*

- BS in Mechanical Engineering June 2022, Magna Cum Laude, **GPA 3.93/4.00**.

Technical Skills

- Python
- C++
- Pytorch
- SolidWorks
- Arduino
- ROS1, ROS2
- MATLAB
- OpenCV
- 3D Printing
- Machine shop

Research and Industry

Computer Vision and Dexterous Robotics Intern — NASA (Johnson Space Center) *Spring 2024*

- Wrote a hand-eye camera calibration package for stereo and thermal cameras (ROS2, C++, Python, OpenCV) and integrated various sensors onto a UR10 robot arm and humanoid (Valkyrie).

Computer Vision and Localization Intern — Gecko Robotics *Summer 2023*

- Implemented the team's first visual odometry (VO) pipeline for a wall-climbing ultrasonic-inspection robot. Design inspired by thorough research into existing VO algorithms, cameras, and robot hardware.

Agrobots Research Assistant — Professor Dmitry Berenson, UMich *2023*

- Agricultural robotics research using a Boston Dynamics Spot robot. Integrated the existing SDK with ROS1 and developed functionality such as autonomously navigating across a room and picking up fruit.

Robotics Research Assistant — UCLA Structures-Computer Interaction Lab (SCI) *2020 - 2022*

- Agricultural Robot: Built from scratch a robot that used OpenCV and YOLOv5 to autonomously navigate and spray plants with herbicide. Controlled using ROS, designed in SolidWorks. [Link]
- Bacteria Robot: Designed a 6cm-long, untethered robot that exploited instabilities in its flexible flagella to steer in viscous fluid. The robot self-balanced using an IMU and Arduino controller. [Link]

Research Assistant — UCLA Robotics and Mechanisms Laboratory (RoMeLa) *2019 - 2020*

- Designed lightweight legs and Smartphone UI for a helium balloon robot that walked on ceilings.

Teaching, Mentorship, and Engineering Extracurriculars

Group Tutor — UCLA Engineering 96 class *2020 - 2022*

- Taught the fundamentals of rocketry through a series of team-based design projects. Lectured, created course material (powerpoints, assignments, etc), and graded the work for 20 students. Paid position.

Research and Development Lead — UCLA Rocket Project [Link] *2020 - 2022*

- Gimballed Thrust Controls Rocket: Maintain stability for a small rocket using PID control on Arduino.
- Parachute Ejection System: Designed and fabricated a novel CO_2 ejection system to deploy parachutes at apogee (22,000ft) more reliably and at one-third the price of the previous system.

Rocket Project Outreach *2019 - 2022*

- Got elementary-schoolers *excited* about rocketry by building and launching 3D-printed model rockets.

Extracurricular Activities

- Music: Guitar, Singing, and Trombone (UCLA Marching Band 2018-2019)
- Soccer: Premier leagues through high-school, Intramural leagues through college

◂ **Spot, Picking up fruit demo**: Spot autonomously traverses a path, identifies the fruit, and picks it up. My role is to develop a general framework – including ROS1 integration, enhanced visualization tools, and streamlined command interface – that allows researchers in the lab to rapidly deploy their experiments.

▼**Gecko Robotics Visual Odometry/SLAM:** testing the localization capabilities of a Toka inspection robot on an indoor oil-tank shell. I implemented the team's first visual odometry (VO) pipeline, developed metrics for measuring localization accuracy, and evaluated my algorithm in a test environment.

▸ **Agricultural Robot:** My trial-by-fire introduction to robotics was building a small robot to do precision-spraying of weeds. I did the mechanical design, electrical assembly, and high level computer-vision and planning, as well as extensive testing in the flax fields of Fargo ND.

▼**UCLA Rocket Project:** From recovery lead on the team's 2021 liquid rocket (apogee 22000 ft) [Link] and onwards, I oversaw everything from R&D projects in controls and custom propulsion to teaching an introductory rocket class.