

Nico Zucca

Passionate maker and innovator. **FRC 2468**

Look at some of my work on my website! nicozucca.com

Experience

Stratom: Robotics Software Engineer

May 2024 – Current

- Developed Mermaid Analysis tool (Merm-An) to automatically generate system architecture diagrams from source code with commit hook.
- Designed RTOS abstraction layers enabling compatibility between FreeRTOS and Linux, enhancing flexibility for embedded controllers.
- Developed architecture and multiple demonstrators for new embedded controller to replace NI CRio for autonomous vehicles.
- Authored safety software to detect and prevent self-collision for autonomous vehicles, ensuring safety in production environments.
- Added GPS waypoint initialization to auto-docking procedure for Autonomous 60K-Loader.
- Wrote robot diagnostic health monitor in ROS2 that interfaces with an Android application for easy debugging and health monitoring.

ARIA Lab: Robotics / SLAM Researcher

November 2023 – July 2024

- Lead team of 13 on Robust Mono-SLAM Meta-analysis, including application of SLAM to high-variance situations (FPV drone videos).
- Developed set of over 30 blender SLAM challenge sequences, addressing falling leaves, fog, low visibility, high acceleration, featureless environments, and more.
- Created automatic sequence evaluator to run up to 12 SLAM algorithms against a suite of test sequences and score the predicted trajectories.
- Developed tools and tutorials for using Docker, Blender, and lab servers.
- Developed novel feature matching algorithm for robust feature matching in high variance planar situations.

Trimble: Software Engineering/Robotics Intern

May 2023 – December 2023

- Managed perception team for deployment of Autonomous vehicle.
- Developed complete multi-platform application using C/python/Docker for peripheral configuration and flashing, including SM Radars, Ethernet Cameras, and Ouster Lidars.
- Designed and constructed complete electrical twin of our autonomous vehicle for use in bench testing and validation.

OSARO: Mechatronics/Robotics Intern

May 2022 – August 2022

- Using Solidworks and Arduino, designed and prototyped a special purpose scanner/ buffer/orientation control system for glasses cases in an automated warehouse setting.
- Using VBA, developed a tool that fully automates the creation of low-poly-high-fidelity collision meshes for an entire robot cell from native CAD files. Previously 20+ hrs/modification.

Unaliwear: Engineering Technician | Outsource Manufacturing Liaison - Fulltime

April 2021 – August 2021

- Developed a complete new product (CAD, prototyping, focus groups, testing, manufacturing).
- Managed transition to a new primary supplier for metal watch parts.
- Oversaw the testing and validation of samples from new manufacturers.
- Coordinated outsourced materials research in China.

Iris Automation: LabVIEW Software Developer - Fulltime

March 2021 – April 2021

- Cleaned and optimized 3rd party LabVIEW automation code used in EV Automotive manufacturing.

Technical Skills

Code and Computing

C/C++	ROS/ROS 2
Python	Flutter
Linux	Rust
Docker	
LabVIEW	

Computer-Aided Design

Solidworks
OnShape
PTC Creo
Design for injection molding
Design for FDM 3D printing

Electronics

PCB EDA → KiCad
Soldering

Education

B.S. Computer Science
- Graduated Spring 2024
- C-MAPP Scholar 22 & 23




Certifications

2023 CSM Algobowl 1st place
HackMIT 2022 IBM Sustainability challenge – 1st prize
Eagle Scout
CAPSTONE Diploma for Autonomous Drifting

General Skills

Leadership
Communication
Time Management
Work Ethic

Interests

 HMI
 Automation
 Special-Purpose Robotics

