

# Sargis Yonan

Robotics & Computer Engineer

## CONTACT

**Email:** sargis@yonan.org  
**Website:** sargis.yonan.org  
**LinkedIn:** linkedin.com/in/sargisyonan/  
**GitHub:** github.com/SargisYonan  
**Location:** Santa Cruz, California  
**Phone:** +1 (209) 417-7976

## EDUCATION

### **M.Sc. in Computer Engineering** **September 2017 - December 2018**

Emphasis in Robotics Engineering & Control Theory  
University of California, Santa Cruz

- Courses in Robotics, Optimal Estimation, Stochastic Filtering, Control Theory
- Thesis: Improved Field Exploration with Variance Suppressing Path Planning
- Introduced a set of path planning techniques for the optimal exploration of unknown fields using an autonomous vehicle

### **B.S. in Computer Engineering** **September 2013 - June 2017**

Concentration in Robotics & Control  
University of California, Santa Cruz

- Project/Research Topics: UAVs, Sensor Node Networking, Power Systems
- Graduated with Honors in Major

### **Minor in Computer Science** **September 2013 - June 2017**

University of California, Santa Cruz

## WORK EXPERIENCE

### **SpaceX** **June 2018 - September 2018**

Associate Flight Software Engineer (Post-Graduate)

Worked on embedded software and hardware systems primarily for large-scale satellite constellation and vehicles. Designed and wrote fault tolerant system critical code and peripheral drivers for flying hardware.

### **University of California, Santa Cruz** **January 2018 - December 2018**

Teaching Assistant

**Microprocessor Systems Design** (Fall 2018): Led instructional labs teaching embedded systems design, hardware design, hardware debugging, embedded software design in C, embedded software debugging, and Linux (libusb, systems C on Linux).

**Engineering Capstone Design** (Winter 2018 - Spring 2018): Advised twenty teams of senior-level engineering students taking their capstone sequence. Met with each team for one hour per week where project details are discussed. Additionally assisted teams in their system design, architecture, low-level implementations, and engineering approaches, as well as low-level hardware and software debugging. The projects ranged from autonomous robots to large-scale mesh networking systems.

## CityBlooms Urban Micro Farms

June 2017 - October 2017

Embedded Software and Hardware Engineering Intern

Designed and implemented various sensor and peripheral drivers for shipping systems that acquired data from live farming and micro-agricultural environments. This involved writing various system level modules in bare-metal C/C++ on a microcontroller as well as C and Python on a Linux IoT system. Created a deployment automation system for shipping hardware.

## Pearl Automation

January 2016 - December 2016

Firmware Engineering Intern

Wrote software components and features on both an ARM based controller with a Real-Time Operating System, and a system with an Embedded Linux Operating System. Developed a dynamic frequency scaling algorithm for a processor that drastically improved the battery life of a device as well as other physically apparent aspects in a shipping product.

## PROJECTS

**Jay Flight Controller** - Sensor drivers, feedback controller, and networking code for a pod of quad-copters.

[github.com/PAVx/jay](https://github.com/PAVx/jay)

**Sensor Node Operating System (snOS)** - Dispatch queue and task manager for microcontrollers in an IoT network.

[github.com/SargisYonan/snOS](https://github.com/SargisYonan/snOS)

**Field Exploration Simulation Framework** - A MATLAB framework and simulation environment for autonomous field exploration using prediction variance suppression techniques introduced in my Masters thesis.

[github.com/SargisYonan/field\\_exploration](https://github.com/SargisYonan/field_exploration)

**Micro Linear Algebra Package** - A matrix math library optimized for embedded systems. The library contains functionality for learning, data fitting, filtering, and controls.

[github.com/SargisYonan/uLAPack](https://github.com/SargisYonan/uLAPack)

**LANcala** - A networked multi-player implementation of the board game Mancala in C++.

[github.com/SargisYonan/lancala](https://github.com/SargisYonan/lancala)

## SKILLS

I actively write code in C/C++ on embedded systems in my personal projects, work, and in the courses I teach. I am also an avid hardware developer, as I tend to make my own electrical circuits for my projects. I also have experience applying feedback controllers on various systems for actuator, attitude, and speed control. I have implemented Kalman filters for sensor fusion and localization purposes on robotic systems. I use MATLAB to verify my controllers, models, and filters.

**Software Engineering:** C, C++, Python, Java, Real-Time Operating Systems, Embedded Software Design, x86/MIPS/ARM Assembly

**Computer Engineering:** Computer Architecture, Digital Logic Design

**Embedded Systems:** ARM, AVR, PIC, CAN, I2C, UART, SPI, sensor integration, protocol debugging hardware

**Robotics Engineering:** Sensor Fusion, Feedback Control, Computer Vision, UAVs  
**Mechanical/Electrical Engineering:** Sensor Design, Analog Filter Design, Electro-Mechanical System Design

**Software/Libraries:** Linux/UNIX, MATLAB, OpenCV, TensorFlow, Eagle CAD

**Computational & Applied Mathematics:** Kalman Filters, Control Theory, Linear Dynamical Systems, Machine Learning, Geostatistics, Frequency Domain & State Space Analysis