

Ryan K. Yamamoto

EDUCATION

Master of Science, UC San Diego, GPA: 3.88

graduated June 2022

- Mechanical Engineering — Focus in Robotics, Controls, and Dynamic Systems

Bachelor of Science, UC San Diego, Major GPA: 3.97

graduated March 2021

- Mechanical Engineering - Robotics and Control Specialization w/ minor in Management Science

Honors: Cum Laude, Provost Honors (≥ 3.5 GPA), HKN Engineering Honors (selected amongst top fifth of class)

EXPERIENCE

Mainspring Energy

Menlo Park, CA

Controls Engineer, *Reaction Quality & Fuels*

Sep 2024 - Present

Controls Test Engineer, *System Verification*

Aug 2022 - Sep 2024

- Developed, tested, and productized algorithms ranging from classical feedback to more modern approaches such as state space estimation and extremum seeking control. Involved in projects covering emissions regulation through optimized path planning to run a fuel-flexible linear generator. Implemented algorithms ranging in application from sensor auto-calibration and diagnostics to control scheme variations built off of LQG and cascade PID. Additionally, executed and automated software release testing spanning across multiple test platforms.

Maxar Technologies

Palo Alto, CA

Structural Analyst Intern, *Structural Analysis*

Summer 2021

- Utilized FEA tools such as Femap and MSC Nastran to analyze the structural integrity of spacecraft components. Created vibration test procedures to validate hardware under intense launch loads.

Mechanical Design Engineer Intern, *Solar Array and Deployable Mechanisms*

Summer 2020

- Designed and published technical drawings for various tooling and test fixtures. Coordinated with manufacturing on parts fabrication. Developed and executed test plans to validate vendor and in-house parts.

Software Engineer Intern, *Software Development*

Summer 2019

- Refactored spacecraft simulator tool to run on new protocol data telemetry frames. Expanded automated queuing tool for simulation tests to support different spacecraft lines.

PROJECTS

Tracheostomy Support Inflatable Device

Jan - Mar 2021

- Inflatable medical device made to support ventilation tubing and minimize physical injury. Utilized skillsets in feedback control, electrical circuit design, fluid dynamics, silicone molding, and sensor integration.

KUKA YouBot Control Simulation

Mar 2021

- State-space feedforward and feedback velocity control used to plan and execute the movement of a 5 revolute joint arm KUKA YouBot with omnidirectional wheels. Explored the use of screw theory for trajectory planning and inverse kinematics.

Particle Filter LiDAR Based SLAM

Feb 2022

- Implemented Monte Carlo particle filtering to simultaneously localize and map a moving vehicle. Wheel encoders and an onboard IMU were leveraged to predict trajectory and used LiDAR measurements to update estimates. Successfully developed occupancy map, texture map, and movement path in real time.

TECHNICAL SKILLS

Robotics and Control	SLAM, Kalman Filtering (EKF, UKF), Markov Decision Process, Supervised Learning, Linear and Non-linear State-space, Classical Control, Model Parametrization
Mechanical Design	Laser Cutting, 3D Printing, Milling, Metal Cutting, Fluid Dynamics, Solid Mechanics, Linear Circuits, Statics, Thermodynamics, CAD Modeling
Programming	C++, Python, Java, SQL, Javascript, MATLAB, Arduino, Simulink, git