Anthony Camarillo

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EDUCATION:

California State University, Long Beach(CSULB) GPA: 3.5

Masters of Science., Mechanical Engineering, Dynamics and Control Expected Graduation: December 2025

Bachelors of Science., Mechanical Engineering, Minor: Applied Mathematics December 2019

Relevant Coursework: Modeling and Analysis of Dynamic Systems, Modern Control of Dynamic Systems, Robot Modeling and Control

EXPERIENCE:

SharkSat, CSULB - *Attitude Determination and Control System(ADCS) Team Member* January 2025 - Present

- Creating linear models from system dynamics to perform analysis and design controllers for a CubeSat attitude control system.
- Programming MATLAB scripts to conduct stability analysis and simulate system response for varying reaction wheel inputs.

RESEARCH EXPERIENCE:

P.A.C.K. Lab, CSULB - *Research Assistant* September 2024 - Present

- Investigating applications of reinforcement learning for control of robotic manipulators and traffic signal control.
- Developing Python scripts to train reinforcement learning agents, process data, and analyze results.
- Composing training documentation on simulation software with detailed explanations and examples for replicability.

PROJECTS:

State Estimation for Vertical Rocket Launch April 2025

- Programmed Python to simulate first stage launch trajectory of a Falcon 9 rocket from dynamic equations of motion and generate simulated flight data.
- Applied the extended kalman filter(EKF) for real-time data processing to estimate rocket position and velocity.
- Visualized the system's change over time and compared estimated values to simulated values, achieving an average estimate error of 0.8% and 0.25% for position and velocity, respectively.

Model Reference Adaptive Controller For Inverted Pendulum November 2024

- Reviewed academic literature on modern control to explore methodologies and identified a study to replicate.
- Reproduced the implementation of a modified Model Reference Adaptive Controller(MRAC) for an inverted pendulum.
- Benchmarked controller performance against traditional MRAC and PID controllers through simulations in MATLAB/Simulink and presented results.

Controller Design for Half Quadcopter System November 2024

- Developed a model for a half quadcopter with MATLAB's System Identification Toolbox based on measurement data.
- Designed PID, pole placement, and LQR controllers for controlling the voltage, pitch, and yaw angle of the half quadcopter to stabilize the system output in accordance to design criteria.
- Visualized and reported the performance of the half quadcopter for each controller to assess the system's response to various reference inputs.

ADDITIONAL EXPERIENCE:

Robert Half - *Emergency Rental Assistance Case Manager* September 2020 - December 2022

- Communicated with applicants of an Emergency Rental Assistance Program to collect necessary documents for processing their application, providing over one million dollars of rent and utility assistance.
- Collaborated with team members to review and verify each application was processed correctly, ensuring quality checks before submission for approval.
- Trained peers on the application process workflow while staying updated on procedural changes.

SKILLS:

Programming: C++, MATLAB, Python, SQL

Software: Docker, Git, Microsoft Excel, SolidWorks

Simulation: MuJoCo, Simulink

Hardware: Arduino, ESP32