Jack Butler

https://github.com/jack33001 jackfbutler.com
https://www.linkedin.com/in/jack–––butler/ jack33001@gmail.com

Master's-level mechanical engineer specializing in robotic and mechatronic systems. Versatile full-stack engineer proficient in all aspects of robotics development, from PCB design and precision machining to software implementation. Seeking to collaborate with a passionate team to tackle complex, unconventional problems.

Education

California Polytechnic State Universiy 2023-2025
M.S. Mechanical Engineering - ***Graduation Expected March 2025*** *San Luis Obispo, CA*

California Polytechnic State Universiy 2019-2023
B.S. Mechanical Engineering, Mechatronics Concentration *San Luis Obispo, CA*

Experience

M.S. Researcher Sep. 2023 – Present
M.S. Thesis, Quadrupedal Robot Control (Paper currently untitled) *San Luis Obispo, CA*

Design and implementation of a control algorithm optimized for fluid gait transitions. The transition between gaits (walking, trotting, bounding, etc.) in a legged robot is a critical moment of instability. By designing an intelligent gait scheduler and a whole-system control strategy to go with it, it can be ensured that the most efficient gait is being selected, and that the robot can transition to that gait with maximum stability.

- Developed and implemented a ROS2 system for controlling a quadrupedal robot
- Designed power and communication electronics for a quadrupedal robot
- Developed a development structure centered around the Nvidia Jetson Orin AGX Nano and STM32 embedded microcontrollers
- Developed a documentation and onboarding package for the Cal Poly Legged Robotics Group

Undergraduate Researcher July 2021-2023
Cal Poly Legged Robotics Group, Multiple Projects *San Luis Obispo, CA*

- Designed a test stand for gait switching in quadrupedal robots
- Developed multiple controllers for a single-leg vertically constrained hopping robot

R&D Mechanical Engineering Intern Summer 2020
Hunter Industries *San Marcos, CA*

- Developed a stator valve for high-performance sprinklers
- Engaged with daily testing and validation of prototypes
- Utilized HP MJF 3D printing for accurate rapid prototyping

R&D Electrical Engineering Intern Summers 2018 and 2019
Mu-Tron Effects *Cardiff, CA*

- Developed analog signal-processing circuitry for guitar effects pedals
- Set up tooling and manufacturing processes for in-house PCB and sheet metal manufacturing

Publications/Patents

Novel Water Saving Device for Nursery Irrigation
PATENT PENDING

Technical Skills, Language Skills, and Interests

OS: Debian and Arch Linux, Windows
Programming Languages: C/C++, Python, MATLAB
Libraries: ROS2, ACADOS, CasADi
Communication Protocols: I^2C, SPI, CAN, UART
3D and PCB CAD: Solidworks, Fusion360, KiCAD
Writing: LaTeX, Office
Languages: English (Native), Spanish (Conversational)
Interests: High Order Systems, Underactuated Systems, Machine Learning Control, System Dynamics, Music, Surfing