Bethany-Anne Calvert

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EDUCATION

Bachelor of Science in Mechanical Engineering, University of Nevada, Reno (3.93 GPA) **May 2021**

Master of Science in Mechanical Engineering, University of Colorado, Boulder (3.64 GPA) **May 2024**

SKILLS

- Microsoft: Word, PowerPoint, and Excel **||** Programs: LabVIEW, C, Python, Assembly, MATLAB/Simulink **||** Design: Certified SOLIDWORKS Associate: C-5467JXFC8W

EXPERIENCE

Research Assistant, **Bio-inspired Perception and Robotics Lab (BPRL), CU Boulder** **Aug 2021– Current**

- Conducted research on fixed-wing UAVs, including the design/construction of hardware systems and modeling using data driven approaches (Sys ID, DMDc).
- Acquired hands-on experience in UAV flight operations and addressed real-time aerodynamic challenges by applying analytical insights to enhance UAV performance.

Research Assistant, **Smart Robotics Lab, UNR** **Nov 2019 – May 2021**

- Developed and designed hydraulically amplified self-healing electrostatic (HASEL) actuator configurations for innovation in soft robotics under a NASA funded research proposal.

PROJECTS

Microcontroller for Accelerometer Input Servo Actuation, **Microavionics Course** **December 2023**

- Demonstrated proficiency in embedded systems programming and hardware integration of PIC18F87K22 microcontroller using C and assembly languages.
- Implemented SPI communication to retrieve accelerometer inputs, enabling dynamic selection of stored data within the EEPROM to drive PWM output for precise servo configurations.

Robust Control of 6DOF Helicopter, **Robust Control Course** **April 2023**

- Formulated generalized plant of MAV with uncertainty and performance weighting functions.
- Synthesized an H∞ controller with bandwidth, tracking error, and disturbance rejection, and analyzed nominal/robust performance and robust stability in presence of uncertainty.

System ID of Fixed-Wing UAV, **System Identification Course** **April 2023**

- Analyzed pitch dynamics of a fixed-wing aircraft by constructing and validating a predictor and applying frequency and time domain ID methods including empirical transfer function estimate, gradient descent, and batch least squares estimation.

Cooperative Localization Between UAV & UGV, **Dynamic State Estimation Course** **December 2022**

- Linearized unmanned ground vehicle discrete-time dynamics about nominal operating point.
- Constructed, tuned, and verified Linear Kalman Filter and Extended Kalman Filter for UGV localization, and to match ground truth trajectory as accurately as possible.

AWARDS

National Science Foundation GRFP, **Fellowship** **April 2021**

- Graduate Research Fellowship Program (GRFP) for exceptional research achievements, demonstrating a commitment to advancing knowledge, and making influential contributions to the academic landscape.

Nevada NASA Space Grant, **Fellowship** **August 2020**

- Undergraduate research grant recognizing measurable results and advancements in STEM disciplines, directly contributing to NASA Mission Directorate research priorities.