Shishir Bhatta

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Education

University of Illinois Urbana-Champaign (UIUC)
B.S. in Aerospace Engineering with a Minor in Computer Science GPA: 3.83 May 2026

Relevant Coursework: Introduction to Computer Systems, Estimation of Dynamical Systems, Aerospace Control Systems, Aerospace Dynamical Systems, Artificial Intelligence, Data Structures, Multi-Agent Reinforcement Learning, Orbital Mechanics, Incompressible and Compressible Flow

Work Experience

Anduril Industries
Software Engineering Intern **May. 2025 - Present**

- Architected a **route-planning** algorithm for the **vehicle management system** to ensure **safety-critical** requirements were met
- Developed **internal tooling** based on the specifications of the Roadrunner manufacturing team to aid in **hardware verification**
- Verified the functionality of various software modules on the **vehicle-management system** for various vehicles based on **airworthiness** requirements

Brunswick
Controls Engineering Intern **Jan. 2025 - May 2025**

- Modeling the **dynamics** of a hydrofoil vessel with active roll and pitch control by creating a high-fidelity **simulation** in **Python**
- Designed the **control assembly box** to meet the engineering deliverables of comfort for customers and maintaining performance
- Programmed a **PID** and **LQR** controller to compare the tradeoffs in terms of efficiency, performance, and robustness in real-time

AstroForge
Flight Software Engineering Intern **June 2024 – Aug. 2024**

- Developed a **SITL** environment for **ADCS** components in **Rust**, enhancing automation in integration and testing processes
- Containerized the **FSW** environment with **LXC**, enabling software execution without hardware, increasing **testing** flexibility
- Integrated a **CI** pipeline check to verify telemetry data, providing a foundation for further **emulation** and **data verification**

Extracurriculars

ACXIS Lab
Undergraduate Research Assistant **January 2024 – Present**

- Published a study on an **information-based** algorithm for **multi-spacecraft** positioning in **interstellar object** exploration
- Developed a **SLAM-augmented VLM** pipeline integrating **uncertainty quantification** to improve robotic decision-making
- Implemented simulations in **Gazebo** and deployed Microsoft's Magma **VLM** to debug dependencies and **object recognition**

Illinois Space Society
Spaceshot GNC Team Lead/Engineer **Aug. 2022 – Present**

- Led a team of **10+ engineers** to developing and testing **GNC** systems in **Python** for a completely **student-designed** rocket
- Implemented **Kalman Filter** and a **6DOF simulation** to improve accuracy of state detection data for the guidance system
- Designed **RTOS-based** flight software in **C++** to accomplish data retrieval from **sensors** and **state estimation** techniques
- Modeled the orientation and positioning of an antenna mounted on 2 motors in Python, designed to track the position of a rocket
- Programmed the **PID** controller on **microcontrollers** in **C** to orient the antenna towards the rocket to transmit **telemetry**

Projects

Multi-Spacecraft Positioning for Interstellar Object Exploration (ISO)

- Tech Stack: Python, MATLAB
- Developed a probabilistic **multi-spacecraft** deployment strategy that positions spacecraft to maximize visual information during **interstellar object** encounters using an **uncertainty-aware** cost function
- Demonstrated through **numerical simulations** the ability to optimally choose spacecraft terminal positions and points of interest

DiffTune: Auto-tuning through Auto-differentiation

- Tech Stack: Python, MATLAB, JAX, SciPy
- Implemented a **gradient-descent** based framework to efficiently tune parameters for **controllers**

Skills

Languages: Python, C/C++, Rust, MATLAB, Java, JavaScript, R
Tools: Linux, NixOS, JAX, Git, Node.js, Django, MongoDB, Docker, NumPy, Pandas
Design: HTML, CSS, Siemens NX, Adobe Photoshop, Canva