Rithvik Bhogavilli

240.498.9761 | rb28@illinois.edu | https://rbhog.me

EDUCATION

University of Illinois, Urbana-Champaign May 2025
B.S. in Computer Engineering GPA 3.78
Coursework : Machine Perception, Computer Systems, Algorithms and Models of Comp, Control Systems, Data Structures, Probability, Linear Algebra, Analog Signal Processing

SKILLS

Languages : Python, C++, C, Bash, x86 Assembly, Java, Kotlin, MATLAB, JavaScript, TypeScript, Rust
Tools : Linux, Git, Wireshark, React, NodeJS, Flask, EagleCAD, Electron, OpenCV, PyTorch

PROFESSIONAL EXPERIENCE

Relativity Space August 2023 - Present
Factory Test Software Intern Long Beach, CA
- Supporting the Data and Control Systems team expedite data acquisition for component testing of upcoming Terran R rocket.
- Designing library for proprietary hydraulic controller protocol to allow for lower latency control of hydraulic test stands.
- Conducting trades on transport level protocols and performance analysis to baseline system requirements for protocol library.

Blue Origin May 2023 - August 2023
Avionics Software Intern Kent, WA
- Supported the Instrumentation and Comms team improve systems for next generation New Glenn rocket applying Agile methods.
- Enabled video streaming by creating camera health and communication software to allow for system monitoring and promotion.
- Developed packet splitting software in C++ for transmission and configuration generators in Python to support distributed devices.
- Captured system requirements of sensor excitation modules with responsible engineers to outline software development timeline.

University of Illinois CyberGIS Center September 2021 - December 2021
Software Engineering Intern Urbana, IL
- Created helper tool scripts to improve maintenance efficiency and increase accessibility of custom CyberGISX framework.
- Developed Anisble playbooks for Docker image version control and virtual machine management for researchers.
- Designed JupyerLab extension using TypeScript to enable seamless installation of Jupyter kernels when referenced in notebook.

University of Maryland MIND Lab June 2020 - August 2020
Software Engineering Intern College Park, MD
- Developed interactive user interface in JavaScript for tracing spread of COVID-19 across floors on campus using Mapbox.
- Designed scraper for University of Maryland map server to retrieve floor layouts as GeoJSON in JavaScript and ArcGIS.
- Removed noise from GPS data algorithmically considering speed of device and using Turf.js with road-fitting APIs.

Efabless.com, Open Circuit Design June 2020 - August 2020
Software Engineering Intern
- Optimized Magic EDA tool in C by implementing binned collections, reducing VLSI design time by 30 percent.
- Enhanced circuit extraction performance by consulting users to improve VLSI design performance by 20 percent.
- Improved time complexity of tool software through analysis and efficient implementation of hash table structures.
- Validated tool performance through analysis using flame graphs generated from Linux perf data to illustrate improvement.

PROJECT EXPERIENCE

Illinois Space Society Spaceshot Avionics August 2022 - Present
- Implemented custom flight software on Teensy 4.1 in C++ for state estimation during flight to control airbrake mechanism.
- Designed 3 DOF Kalman Filters fusing barometer, accelerometer, and gyroscope data to estimate displacement and orientation.
- Created 6 DOF rocket physics simulation and emulated flight sensor suite in Python for testing and improving control algorithms.
- Devised and enabled scheduler for experimental finite state machines on rocket in ChibiOS RTOS to compare flight effectiveness.

FIRST Robotics Competition Team 4099, Controls Lead and Mentor August 2017 - Present
- Designed and programmed system architecture in Kotlin to enable teleoperation and movement of competition robot.
- Developed custom controllers using PID and motion profiling to allow for autonomous holonomic drivetrain trajectory following.
- Conducted workshops on state space control, perception, and state estimation to onboard students into team projects.

HackIllinois 2022, John Deere Community and Sustainability Winner
- Alerted farmers of real-time crop disease by corroborating distributed device data and visualizing spatial data in Mapbox.
- Refined crop disease data using trained TensorFlow Lite model to improve detection of diseases in cassava on Google Edge TPU.