

Thomas Bird

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EDUCATION

Rensselaer Polytechnic Institute

Troy, NY

B.S. in Computer Science; Leadership Scholarship; Dean's List; 3.45 Cumulative GPA

Aug. 2021 – Dec. 2024

WORK EXPERIENCE

United Launch Alliance

Denver, CO

Software Engineer I - Flight Simulation & Embedded Systems

February 2025 – Current

- Architected end-to-end GitLab CI/CD pipeline for simulation tools, automating RPM/wheel builds, artifact uploading, and NFS deployment; built and maintained Linux-based Docker containers serving as pipeline runners.
- Converted legacy Fortran code to C++ for the integrated testing of NASA's Artemis rockets; then created tooling to validate celestial body ephemeris and simulation vehicle trajectory calculations against expected thresholds.
- Standardized Python packaging infrastructure across 20+ internal tools, establishing department-wide practices.

Software Engineer Intern - Flight Simulation

May 2024 – July 2024

- Developed new build plans to automate testing, report parsing, and package distribution on the internal network, reducing manual effort and increasing deployment speed by over 300% for four internal tools.
- Enhanced and modernized automation and build tools, as well as environment setup and runtime configuration, for software responsible for archiving simulation data, queuing users, and booting the flight simulators.
- Refactored logging infrastructure across simulation tools using structured logging patterns, reducing noise by 400+ lines and standardizing output formatting for improved debugging and maintainability.

Route4Me

Tampa, FL

Software Engineer Intern - REST API

June 2023 – August 2023

- Developed and optimized Route4Me's Python SDK; utilized flake8 linting and formatting to standardize and enhance code readability across 40+ production files, leading to efficient resolution of HTTP errors.
- Migrated and integrated feature sets from Route4Me's Java and C# SDKs into the Python SDK, employing rigorous unit testing to ensure seamless API functionality and cross-platform compatibility for clients.
- Built automated data pipeline using Selenium, BeautifulSoup, requests, and pandas to extract and process competitor routing and feature data, reducing manual research time for the marketing and sales teams.

PROJECTS

BLE-Enabled Cross-Platform Application | React Native, TypeScript, Supabase, SQL, C++

2024 – Present

- Built a cross-platform hydration app with real-time sync, authentication, gamified scoring, and social leaderboards; winning 1st place regionally in NY State Business Plan Competition's product track.
- Implemented adaptive quota system using weather APIs, geolocation, and biometric data including weight and activity level; integrated barcode scanning via Open Food Facts API for automatic beverage logging.
- Developing BLE connectivity layer on companion hardware running C++ firmware on ESP32 and nRF chips.

OpenCV Image Mosaic Generator | Python, OpenCV, NumPy, SIFT, RANSAC

April 2024

- Engineered an image mosaic generator that blends multiple overlapping images into a single high-resolution composite using homography estimation and perspective warping.
- Applied SIFT feature detection, FLANN-based nearest neighbor matching, and RANSAC-based outlier rejection for robust image alignment across varying camera angles and lighting conditions.

Geometric Floor Plan Analyzer | C++, CGAL, Qt5

November 2023

- Developed a floor plan analysis that outputs which wall spaces are most visible in a given 2-dimensional floor plan.
- Leveraged various Computational Geometry techniques such as raycasting, Delaunay triangulation, Minkowski sums, and Poisson disk sampling to compute a visibility heat mapping for floor plans.

SKILLS

Technical: C, C++, C#, Python, Java, Swift, Assembly, JavaScript, HTML, CSS, PostgreSQL, LaTeX, Git, React, Unity, Node.js, REST APIs, JUnit, Valgrind, Vim, Firebase, OpenCV, CGAL, Pandas, NumPy, PyTorch, TensorFlow, Tailwind, Selenium, BeautifulSoup, Requests, BitBucket, Bamboo, Jira, Linux, Red Hat, CI/CD, GitLab, Docker
Relevant Coursework: Data Structures, Algorithms, Reinforcement Learning, Discrete Mathematics, Binary Exploitation, Computational Geometry, Game AI, Relational Databases, Database Management, Agile Methodologies, Embedded Systems, Operating Systems, Computer Vision, Multi-variable Calculus, Differential Equations