

# 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