Thomas Bird

415-728-7784 | birdt@rpi.edu | tommybird.net | linkedin.com/in/tommycbird | github.com/tommycbird

Education

Rensselaer Polytechnic Institute Troy, NY

B.S. in Computer Science; Leadership Scholarship; Dean's List; 3.37 Cumulative GPA *Aug. 2021 – May 2025*

Work Experience

United Launch Alliance May 2024 – July 2024

Software Engineer Intern - Flight Simulation *Denver, CO*

- Led the standardization of Python environments for an integrated test suite simulating space flight for NASA's Artemis II and III missions' Interim Cryogenic Propulsion Stage (ICPS), ensuring consistent, reliable simulations.
- Developed new Bamboo build plans to automate testing, report parsing, and package distribution on the internal network, reducing manual effort by 80%, and increasing deployment speed by over 300% for four internal tools.
- Enhanced and modernized automation and build tools, as well as setup configuration, for software responsible for archiving simulation data, queuing users, and booting the simulation, streamlining development processes and removing over 400 trivial run log output lines, enhancing overall project clarity and maintainability.

Route4Me June 2023 – August 2023

Software Engineer Intern - REST API *Tampa, FL*

- 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 compatibility for clients.
- Constructed an advanced web scraper with Selenium WebDriver, BeautifulSoup, pandas, and requests, resulting in automation and enrichment of data acquisition processes enabling marketing content strategies.

Projects

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 blue noise to compute a visibility heat mapping for floor plans.

Context Aware 3D Visualizer | *JavaScript, AWS EC2, Node.js, model-viewer, APIs* October 2023

- Created 'Readee,' a Chrome extension that visualizes terms in 3D using Google's model-viewer, alongside contextual definitions sourced from an LLM via an API, all within a 24-hour hackathon timeframe.
- Engineered the backend on Amazon AWS EC2 using Node.js, ensuring robust and scalable infrastructure for real-time data processing and visualization, as well as efficient access to cached queries.

Cooperative Multi-Agent ML System | *Python, C#, PyTorch, TensorFlow, Unity* April 2023

- Created a Unity simulation environment wherein multiple agents can learn in tandem to beat a 'bullet hell' game.
- Used PyTorch to create a robust and scalable training ecosystem, resulting in a successful neural network.
- Applied TensorFlow to visualize algorithm performance data throughout the 70-million step training process.

iOS Fitness Application | *SwiftUI, Mapbox, Firebase, Git* November 2022

- Led development on an iOS application programmed in Swift with Swift UI, integrated location features with Mapbox's mapping SDK, and connected online features to an updating database via Firebase.
- Developed an algorithm to generate random running routes on a map that start and end at the same destination and span a specified length derived from the Dijkstra's and 5-Sum algorithms.

Skills

Technical: C, C++, C#, Python, Java, Swift, Assembly, JavaScript, HTML, CSS, PostgresSQL, 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, Unreal Engine 5
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