Thomas Bird

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Education

Rensselaer Polytechnic Institute Troy, NY

B.S. in Computer Science; Leadership Scholarship; Dean's List; 3.23 Overall; 3.55 Major *Aug. 2021 – May 2025*

Work Experience

Machine Learning Researcher August 2023 – Present

Rensselaer Polytechnic Institute *Troy, NY*

- Supported the research and implementation of a new unsupervised method for detecting geometric anomalies in high-resolution 3D point clouds, adapting established 2D anomaly detection techniques to three dimensions.
- Leveraged 3D scanning hardware and point cloud data processing techniques to generate highly detailed renderings from scanned objects, improving training database and data visualization capabilities.

Software Engineer Intern June 2023 – August 2023

Route4Me *Tampa, FL*

- Developed Route4Me's Python SDK, enhancing software quality by identifying and debugging HTTP errors and implementing existing features from the Java and C# SDKs in order to provide clients with proper API access.
- Constructed a robust web scraper leveraging Python, Selenium, BeautifulSoup, Pandas, and Requests, automating and enhancing data collection processes.

React Developer May 2023 – Sep 2023

Aixus Health *Albany, NY*

- Spearheaded the development of a patient-focused MVP application for Aixus Health utilizing React Native, creating an intuitive and user-friendly interface.
- Linked the front ends for iOS, Android, and web through a database hosted on Supabase.

Projects

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

- 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 finish at the same destination and span a specified length derived from the Dijkstra's and 5Sum algorithms.

Machine Learning Agents | *Unity, C#, ML-Agents, PyTorch, Python, TensorFlow* April 2023

- Trained multiple agents to defeat a boss character using PyTorch in a Unity "bullet hell" game.
- Employed TensorFlow for data visualization and tracking of algorithm performance throughout the training process in order to author a research paper on the project, effectively summarizing the procedures, results, and insights derived from the work.

C-Code Disassembler | *C, Assembly* March 2022

- Developed a compiler in C that processes and converts basic C code to working MIPS instructions for Assembly.
- Programmed capabilities for basic math instructions (add, subtract, multiply, divide), looping, and functions.

AI Video Curator | *HTML, CSS, JavaScript, Selenium, BeautifulSoup, APIs, LLM* Sep 2023 – Present

- Developed an AI-powered video curation website and Chrome extension that analyzes video data evaluate quality and provide users with video summaries.
- Programmed web scraping for Youtube videos, and processed said data to query an LLM API.

Technical Skills

Languages: C, C++, C#, Python, Java, Swift, Assembly, JavaScript, HTML, CSS, SQL, LaTeX, Dafny
Frameworks: Git, React, Unity, Node.js, JUnit, Valgrind, GCP, Firebase, Supabase, VS Code, Visual Studio, Eclipse
Libraries: Pandas, TensorFlow, ML-Agents, Bootstrap, Selenium, BeautifulSoup, Requests
Relevant Coursework: Data Structures, Algorithms, Computer Organizations, Principles of Software, Intro to Artificial Intelligence, Discrete Math, Modern Binary Exploitation, Computational Geometry, Game AI, Database Systems, Software Design and Documentation, Multi-variable Calculus, Differential Equations