

# Sam Phillippo

(802) 556-1221

[www.github.com/samphillippo](http://www.github.com/samphillippo)

[samphillippo1@gmail.com](mailto:samphillippo1@gmail.com)

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## EDUCATION:

**Northeastern University**, Boston, MA

*Sept. 2020-Present*

**Khoury College of Computer Sciences**

*May 2024*

*Candidate for Bachelor of Science in Computer Science, Concentration in Artificial Intelligence*

Honors: GPA: 3.98/4.00 | National Merit Scholarship Recipient

Relevant Courses: Natural Language Processing | Practical Neural Networks | Computer Graphics | Object-Oriented Design | Machine Learning | Software Eng. | Algorithms + Data | Linear Algebra

Leadership: Oasis Mentor (Managed CS Project Groups), Discrete Structures TA (Led Recitation)

## TECHNICAL SKILLS:

**Languages (Proficient)**: C++, C, Python, Java, Javascript, Typescript, HTML/CSS

**Technologies (Proficient)**: OpenCV, PyTorch, OpenGL, React, Hugging Face, CUDA, V4L2

## RELATED EXPERIENCE:

**Computer Vision + ML Engineering Co-op, LineSpect LLC**, Mill Valley, CA *Jan. 2023 - Jun. 2023*

- Utilized C++ and OpenCV within Linux environments to develop embedded camera products
- Led development and architectural design of a novel system for drone-based aircraft detection
- Conducted extensive research on various machine learning models, building and tuning an SVM
- Researched and developed an innovative OpenCV image processing pipeline to extract moving objects from cluttered backgrounds utilizing optical flow and morphological operations
- Engineered a Raspberry Pi system to enable onboard drone autopilot ADS-B perception via UDP

**Software Engineering Co-op, NextDroid Inc**, Boston, MA

*Jan. 2022 - Jul. 2022*

- Contributed across various domains of the tech stack to develop software for testing autonomous vehicles, covering LIDAR perception, data analysis, and the visualization/annotation engine
- Took charge as lead visualization developer, using the Potree library and Three.js to interact with point clouds, and overhauling the annotation system to adhere to a new lane representation standard
- Solved complex problems utilizing Javascript, C++, HTML/CSS, Julia, and various AWS services

## PERSONAL PROJECTS:

**Interactive OpenGL 3D Environment**

*Nov. 2023 - Present*

- Ongoing solo development of a voxel-based sandbox game, built with C++ and OpenGL
- Designed GLSL shaders for an immersive day-night cycle employing the Phong Lighting Model
- Developed intricate pathfinding algorithms for a novel AI system capable of dynamic world-editing

**Automatic Prompt-Based Bibliography Generator**

*Feb. 2024 - Apr. 2024*

- Collaborated with a small team to design a natural language processing tool leveraging SciBERT word embeddings and cosine similarity to identify research papers closely related to text prompts
- Constructed an HNSW vector database with Pytorch and Slurm on a GPU cluster for parallelization

**Pretrained Audio Neural Network Improvement Research**

*Mar. 2024 - Apr. 2024*

- Evaluated prior research on Pretrained Audio Neural Networks by Q. Kong et. al from 2020
- Investigating the performance of a deep residual network compared to the paper's top CNN model
- Designed a custom fine-tuning algorithm to assess mAP on the GTZAN genre-labeling task

INTERESTS: Writing + Performing Music, Travel, Hiking, Geography, Gaming, Cooking