

Zachary Oliver Birenbaum

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EDUCATION

Colgate University – Bachelor of Arts in Computer Science

- 3.5 Cumulative GPA – Magna Cum Laude

Hamilton, NY

August 2020 – May 2022

Purdue University – Computer Science Major

- 3.6 Cumulative GPA – Dean's List

West Lafayette, IN

August 2017 – December 2019

WORK EXPERIENCE

Software Engineer – Backend | Independent Consultant

August 2022 – Present | Remote

- Cloud and blockchain engineer working directly with CTO of California-based fintech Tender.fi to develop a lending platform for collateralizing, leveraging and hedging ERC20 and Uniswap LP tokens on the Ethereum blockchain
- Leveraged Google Cloud to develop serverless Node.js applications for resolving and executing smart contract functions as well as syncing updated metrics to a Cloud Firestore database
- Designed a high-performance sentiment analyzer for San Francisco-based Data as a Service (DaaS) startup

RESEARCH & INTERSHIPS

Software Engineer – Research | Colgate University

May 2021 – April 2022 | Hamilton, NY

- Designed and implemented a vectorized, GPU-accelerated stochastic simulation algorithm using CUDA C++
- Developed a convolutional neural network architecture to enable substantially higher predictive performance than benchmark models such as FaceNet using TensorFlow and OpenCV
- Leveraged the DLIB and OpenCV C++ libraries to develop a data processing pipeline for transforming raw photos into cropped and aligned model inputs for use by biologists in ecological studies

Data Engineer – Research | Purdue University

September – December 2019 | West Lafayette, IN

- Collaborated in weekly meetings with Purdue Machine Learning and Cybersecurity faculty along with our counterpart teams at DARPA and NASA to improve an engine for detecting and preventing malicious messages sent to secure institutions or high-profile individuals via unconventional methods like LinkedIn

Software Engineer – Finance | T-Mobile US, Inc.

Summer 2019 | Bellevue, WA

- Developed detailed test cases for T-Mobile's internal accounting system utilizing Python and SQLAlchemy which output Microsoft Excel spreadsheets breaking down relevant details such as customer contract information by device and account to facilitate intra-team collaboration and quality assurance testing

Data Analyst – Machine Learning | Verizon Communications Inc.

Summer 2018 | Basking Ridge, NJ

- Increased Verizon's operating income by a projected \$3MM through the application of big data and machine learning solutions such as Amazon Athena to generate insights for Verizon's interactive voice response system

PROJECTS

Codex-Language-Server

- Language server protocol (LSP) for OpenAI Codex written in Typescript to serve as an alternative to GitHub Copilot and provide extended features such as code completion, documentation generation, and AI-assisted bug fixing in development environments such as VSCode, Neovim, and Emacs

Copilot.lua

- Neovim plugin which extends LSP client capabilities and provides an efficient and extensible API allowing other plugins to access the official Node.js GitHub Copilot language server

Copilot-cmp

- Completion source for nvim-cmp which makes use of the copilot.lua API to obtain suggestions from the official Node.js GitHub Copilot language server which are then displayed and inserted via a highly customizable popup menu

Notable Open-Source Contributions

- [Sorin-Ionescu/Prezto](#) (12,900+ Stars, 4,500+ Forks, 306+ Contributors)
- [Neovim/Neovim](#) (57,500+ Stars, 4000+ Forks, 830+ Contributors)
- [NvChad/NvChad](#) (11,800+ Stars, 700+ Forks, 120+ Contributors)

Maintainer

Contributor

Core Developer

SKILLS & INTERESTS

Languages (Lines of Code): Python, C, Lua (10,000+) | C++, Java, JavaScript (3000+) | Go, CUDA, Bash, Zsh (1000+)

Tools & APIs: Docker, Google Cloud, gRPC, OpenAPI, Doxygen, TensorFlow, AWS, Busted, Pytest

Linux Administration: 8 years of experience using Linux as a primary OS and maintaining personal servers

Colgate Coders: Organized and led workshops on how to make open-source contributions and navigate the command line

Personal Hobbies: Scuba diving, bouldering, traveling, reading, writing code that helps people write better code

RESEARCH PUBLICATIONS

Birenbaum, Z., Do, H., Horstmyer, L., Orff, H., Ingram, K., & Ay, A. (2022). SEALNET: Facial recognition software for ecological studies of harbor seals. *Ecology and Evolution*, 12, e8851. <https://doi.org/10.1002/ece3.8851>