Zachary Oliver Birenbaum

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EDUCATION

Colgate University – Bachelor of Arts in Computer Science — **Hamilton, NY**
- 3.5 Cumulative GPA – Magna Cum Laude — August 2020 – May 2022

Purdue University – Computer Science Major — **West Lafayette, IN**
- 3.6 Cumulative GPA – Dean's List — 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 startup Tender.fi to create a new token and lending platform for collateralizing, leveraging and hedging ERC20 and Uniswap LP tokens
- Implemented serverless NodeJS Google Cloud Functions to execute smart contract view functions with the web3.js library and sync updates to a Cloud Firestore database
- Designed a high-performance sentiment analyzer for San Francisco based Data as a Service (DaaS) startup

RESEARCH & INTERNSHIPS

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 for datasets with limited class examples 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 firm's internal accounting system utilizing Python and SQLAlchemy which generated excel outputs containing customer contract breakdown by device and account, alongside other relevant details for ease of intra-team and QAT usage

Data Analyst – Machine Learning | Verizon Communications Inc. — **Summer 2018 | Basking Ridge, NJ**
- Leveraged big data and machine learning solutions such as Amazon Athena to generate insights into Verizon's Interactive Voice Response system which were forecasted to provide a $3MM increase in operating income

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 & Copilot-cmp
- Neovim plugin which extends LSP client capabilities and provides an efficient and extensible API utilized by other plugins to interface with the official NodeJS GitHub Copilot language server
- Completion source for nvim-cmp which makes use of the copilot.lua API to obtain suggestions from GitHub Copilot as a user types, which can then be displayed or inserted from a highly customizable popup menu

Notable Open-Source Contributions
- **Sorin-Ionescu/Prezto** (12,900+ Stars, 4,500+ Forks, 306+ Contributors) — **Maintainer**
- **Neovim/Neovim** (57,500+ Stars, 4000+ Forks, 830+ Contributors) — **Contributor**
- **NvChad/NvChad** (11,800+ Stars, 700+ Forks, 120+ Contributors) — **Core Developer**

SKILLS & INTERESTS

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