

Zachary Oliver Birenbaum

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EDUCATION

Colgate University

Bachelor of Arts in Computer Science, Minor in Philosophy

- 3.5 Cumulative GPA – Magna Cum Laude

Hamilton, NY

May 2022

Purdue University, College of Science

Bachelor of Science in Computer Science, Minor in Philosophy

- 3.6 Cumulative GPA – Dean's List

West Lafayette, IN

December 2019

RESEARCH

Undergraduate Research Assistant: Colgate University

SealNet

Hamilton, NY

May 2021 - January 2022

- Developed, trained and evaluated a new convolutional neural network, optimized for learning to recognize and classify individual seals in open, self-expanding datasets on limited inputs using Tensorflow and OpenCV.
- Leveraged the DLIB and OpenCV C++ libraries to develop a data processing pipeline to transform raw photos into model inputs consisting of individual harbor seals' face-aligned crops for use by biologists in ecological studies.

Bird Migration Research

May 2021 - August 2021

- Listed author in invited study on the effects of thermal stress on bird migrations for written and technological contributions, including the acquisition of 64,000 JSON documents detailing global intra-day weather data.

Undergraduate Research Assistant: Purdue University

LASER

West Lafayette, IN

September 2019 - December 2019

- Provided analytics and analysis to a DARPA funded research initiative for detecting and preventing malicious messages sent to secure institutions or high-profile individuals via unconventional methods like LinkedIn.
- Collaborated with DARPA and NASA to find ways of increasing model performance and provide inputs to the model training along with attendance in weekly meetings with a team of three faculty from the Machine Learning and Cybersecurity departments, four graduate and two undergraduate research assistants including myself.

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>

WORK EXPERIENCE

T-Mobile US, Inc.

Computer Science and Finance Analyst: Revenue Domain Team

Bellevue, WA

May 2019 - August 2019

- Developed detailed test cases for firm's internal accounting system utilizing Python and SQLAlchemy which generated excel outputs containing results and customer contract breakdown by device and account, alongside other relevant details for ease of intra-team and QAT usage.
- Created insight dashboards and templates for internal financial reports which were utilized within my department for trend and anomaly detection, and by numerous other accounting teams in various data verification processes.

Verizon Communications Inc.

Machine Learning Analyst: Data Strategy & Analytics

Basking Ridge, NJ

June 2018 - August 2018

- Leveraged big data and machine learning solutions in a collaborative environment to provide cost reduction analytics on Verizon's Interactive Voice Response system.
- Insights forecasted to provide \$3MM increase in operating income.

PROJECTS

DSSA-GPU: GPU accelerated simulator for stochastic systems with delayed reactions written in CUDA

TechWeek: Designed a secure containerized multi-user guest environment on personal server for use by workshop attendees

Notable Open-Source Contributions

- [zbirenbaum/Copilot.lua](https://github.com/zbirenbaum/Copilot.lua) (158 Stars, 7 Forks, 6 Contributors) **Author**
- [Sorin-Ionescu/Prezto](https://github.com/Sorin-Ionescu/Prezto) (12,800+ Stars, 4,500+ Forks, 306 Contributors) **Maintainer**
- [Neovim/Neovim](https://github.com/Neovim/Neovim) (54,000+ Stars, 3900+ Forks, 815 Contributors) **Contributor**
- [NvChad/NvChad](https://github.com/NvChad/NvChad) (10,000+ Stars, 634 Forks, 100 Contributors) **Core Developer & Organization Member**

SKILLS & INTERESTS

Languages: (8 Years) Python, bash, zsh (7 Years) C, C++ (4 Years) Java (2 Years): CUDA, Lua, JavaScript

Tools & APIs: Docker, TensorFlow, OpenCV, Pandas, DLIB, IEX Cloud, Tweepy, AWS, IDA Pro

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