Seraphina Nix

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Experience

Research Engineer at Redwood Research *November 2020 - August 2022*
Co-authored a paper on novel techniques for adversarially training neural networks
Worked on a small research team to define and investigate research questions in deep learning
Designed and built out infrastructure for managing data and distributed training runs

Research Engineer at Machine Intelligence Research Institute *February 2020 - November 2020*
May 2019 - August 2019
Designed and implemented novel algorithms for performance optimization of a large Haskell codebase
Evaluated multiple Haskell concurrency models for performance and ease of use

Cybersecurity Intern at Lawrence Livermore National Laboratory *May 2018 - August 2018*
Wrote an efficient GPS simulator to analyze spoofing attacks on civilian GPS receivers
Aggregated simulation data to evaluate GPS spoofing countermeasures in a smart grid setting
Explored a large set of network traffic data to find anomalous traffic and analyze usage patterns

Physics Research Assistant at Oberlin College *August 2017 – May 2018*
Collaborated internationally with multiple research groups to design a data analysis workflow for an astrophysics experiment
Used Fourier analysis and digital filters to clean data of systemic noise and search for transient astronomical events of unknown duration and shape

Projects

Busy Beavers *Haskell*
An in-progress attempt to analyze the behavior of all 5-state Turing machines
Similar to a JIT compiler for a very small programming language

Minor Minimal Nonapex Graphs *Rust*
Graph canonicalization, planarity checking and enumeration of almost planar graphs

Publications

Adversarial Training for High-Stakes Reliability *Redwood*
Daniel M. Ziegler, Seraphina Nix, Lawrence Chan, Tim Bauman, Peter Schmidt-Nielsen, et al.
Thirty-sixth Conference on Neural Information Processing Systems, 2022 (forthcoming).

A single-beam, potassium SERF magnetometer for the Global Network of Optical Magnetometers to search for Exotic physics (GNOME) *Oberlin*
Sunyool Park, Perrin Segura, Seraphina Nix, Jason Stalnaker.
APS Division of Atomic and Molecular Physics Meeting 2018, abstract id.E01.063, 2018.

Skills

Python, Haskell, C/C++, Rust
Pytorch, Numpy, LEAN, Docker, SQL, Git

Education

Oberlin College *2016 - 2019*
Bachelor of Arts in Mathematics
3.53 GPA