

# 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

Decreased warm start times of our compiler by 90%  
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