

Current Address
1927 22nd St. Apt. C
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Permanent Address
1927 22nd St. Apt. C
Los Alamos, New Mexico 87544

Education

New Mexico Tech

December 2020

B.S. Mathematics

Notable coursework: Statistical Machine Learning, Mathematical Statistics, Differential Geometry, PDEs, ODEs, Mathematical Modeling, Numerical Linear Algebra, Analysis

New Mexico Tech

May 2020

B.S. Computer Science

Notable coursework: Machine Learning, Compiler Writing, Blockchain & Cryptocurrency, Design & Analysis of Algorithms, High Performance Computing, Systems Programming, Formal Languages & Automata

Research Experience

Postbaccalaureate Researcher

January 2021–Present

Los Alamos National Laboratory

Los Alamos, New Mexico

Mentor: Juston Moore

Research focused on trustworthiness and reliability of artificial neural networks. Investigated methods to improve out-of-distribution data detection in probabilistic machine learning models. Investigated similarities in representations learned by non-robust and robust neural network classifiers across distinct architectures.

Research Intern

May 2019–January 2021

Los Alamos National Laboratory

Los Alamos, New Mexico

Mentor: Juston Moore

Developed neural network classifiers to detect text generated by Transformers. Developed adversarial attacks on the classifiers and investigated robustness. Researched the transferability of the classifiers and attack to other Transformer based language models.

Research Intern

June 2018–September 2018

Los Alamos National Laboratory

Los Alamos, New Mexico

Mentor: Garrett Kenyon

Worked on improving parallelization of PetaVision, a library for designing and deploying large-scale neurally-inspired computational models. Developed methods to use Convolutional LCA Sparse Coding to separate multiple signals from a single audio source.

Contract Programmer

May 2015–October 2016

VanDevender Enterprises

Albuquerque, New Mexico

Mentor: Pace VanDevender

Wrote software to sanitize, parse, and visualize sensor data on a research vessel sailing on the Great Salt Lake. Worked with team to understand physical phenomena.

Publications

T. Sloan, J. P. VanDevender, T. B. Neilsen, R. L. Baskin, G. Fronk, C. Swaim, R. Zakirov, and H. Jones. Magnetised quark nuggets in the atmosphere. *Scientific Reports*, 11(1):22432, Nov 2021

H. Jones and J. Moore. Is the discrete vae's power stuck in its prior? In *"I Can't Believe It's Not Better!" NeurIPS 2020 workshop*, 2020

M. Dubey, H. Jones, A. Thresher, and G. Kenyon. Separating musical sources with convolutional sparse coding. In *Proceedings of the 2nd International Conference on Applications of Intelligent Systems*, APPIS '19, New York, NY, USA, 2019. Association for Computing Machinery

Presentations

H. Jones and J. Moore. Robust detection of computer generated text. In *Chesapeake Large-Scale Analytics Conference*, Annapolis, MD, 2019

Awards

Los Alamos National Laboratory Student Symposium Best Poster 2019

Projects

WaifuXL **2021–Present**
Unreleased

Providing completely free image upsampling with state of the art image super resolution models (Real-ESRGAN) locally in users browsers with WebAssembly.

PettingZoo **2018–Present**
<https://github.com/haydn-jones/PettingZoo>

Training neural networks to play a hand made Mario style platformer game using genetic algorithms. Scalable across many machines.