CHARLIE GUNN

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Employment

LEIDOS AI/ML ACCELERATOR
Software Engineering Intern *Summer 2020*
- Researched xRCA (Extended Rapid Class Augmentation), a progressive learning technique to augment new classes onto a model without using data from old classes
- Developed a novel and general technique for stabilizing xRCA initialization accuracy on few data
- **Built with: Pytorch, Numpy, Jupyter, AWS**

LEIDOS
Software Engineering Intern *Summer 2019*
- Researched techniques for fully homomorphic encryption over machine learning models
- Tested and benchmarked homomorphic encryption libraries (SEAL, Palisade, nGraph-HE)
- **Built with: Tensorflow, Docker**

BLACKBOILER
Software Engineering Intern *Summer 2018*
- Developed natural language processing solutions to aid automated contract review
- Clustered legal documents into semantic groups using unsupervised machine learning techniques
- **Built with: SpaCy, Scikit Learn**

CS 2110: COMPUTER ORGANIZATION & PROGRAMMING
Teaching Assistant *Fall 2020 – Present*

Projects

MENDAX
Deep Learning Research Project *Fall 2020*
- Trained a set of networks to communicate with eachother, split into adverserial teams of "liars" and "truthtellers" in a situation inspired by Among Us
- Explored the conditions in which networks were able to distinguish "liars" from "truthtellers"
- **Built with: Pytorch, Numpy**

GEOVERIFY
Research Project *Aug. 2018 – June 2019*
- Haskell library (and command line interface) for manipulating and verifying geometry proofs
- The library can parse and understand both simple arithmetic and geometric propositions, and supports extension by means of postulates and theorems
- **Built with: Haskell (MTL, Lens, Transformers), PostgreSQL, Django**

Awards

PENNAPPS XX
3rd Place Overall – Best Open Source Contribution – Hacker's Choice *Sept. 2019*
- Developed ImpromPPTX, an automatic real-time presentation generator
- Uses custom-built ML models to generate relevant presentation slides, complete with titles, text summary, and images
- **Built with: SpaCy, Pytorch, FastText, Django**

VTHACKS
1st Place Overall *Mar. 2019*
- Created Electromotivated, a website that automatically parses and analyzes pictures of circuits using computer vision and graph algorithms
- **Built with: OpenCV, Numpy, Scikit Learn, Django**

USA COMPUTING OLYMPIAD (USACO)
Platinum Division *Mar. 2017 – Present*

Education

Georgia Institute of Technology
Class of 2022 – 4.0 GPA
- BS Computer Science
- BS Mathematics

Thomas Jefferson High School for Science and Technology
Graduated 2019

Skills

LANGUAGES
- Python
- Haskell
- Javascript
- Rust
- C++

TECHNOLOGIES
- Pytorch
- Linux (Ubuntu, Arch)
- Docker
- AWS EC2

MISC
- Chess
- Bananagrams

Relevant Courses

Geometric Group Theory
MATH 4803 – In Progress

Algebraic Topology
MATH 4432 – In Progress

Knot Theory & Grid Homology
MATH 4803 – Grade: A

Abstract Algebra I
MATH 4107 – Grade: A

Complex Analysis
MATH 4320 – Grade: A

Real Analysis I
MATH 4317 – Grade: A

Honors Automota & Complexity Theory
CS 4510X – In Progress

Design & Analysis of Algorithms
CS 3510 – Grade: A

Probability and Statistics
MATH 3215 – Grade: A