Unique Divine

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EDUCATION

Columbia University — **New York, NY**
M.S. Applied Mathematics (June 2021)
B.S. Applied Physics, minor in Applied Mathematics (May 2020)
Relevant Graduate Coursework: Data Mining, Machine Learning for Data Science, Natural Language Processing, Applications in Financial Machine Learning, Empirical Methods of Data Science, Mathematics for Data Science

Susquehanna University (3-2 dual degree program with Columbia University) — **Selinsgrove, PA**
B.S. Physics, minor in Computer Science | Dean's list | Departmental honors (May 2018)

TECHNICAL SKILLS

Programming: Python (extremely proficient, 6+ yrs), Bash/Shell, Java, SQL, UNIX / Linux
Libraries: PyTorch, Keras, TensorFlow, Scikit-learn, SciPy.stats, Pytest, NumPy, Pandas, Matplotlib, Plotly, Flask
Other: Git, Vim, Tableau, HTML, PostgreSQL, MongoDB, Docker, Kubernetes

EXPERIENCE

IBM
Data Science Intern (Jun 2021 – Aug 2021)
- ❏ Performed clustering and unsupervised topic modeling with survey responses for 2 IBM product teams
- ❏ Wrangled terabytes of data made up of click streams, product usage, and NPS data to derive actionable insights
- ❏ Regularly presented visualizations and results to stakeholders, the VP of Client Advocacy, and other leadership

Applied Technology Solutions, Inc. (ApTSi)
Artificial Intelligence Engineer Intern (Sep 2020 – Jun 2021)
- ❏ Developed novel ML applications to automate portions of the doctor-patient interaction with NLP
- ❏ Advised and implemented necessary DevOps changes with Docker and Kubernetes
- ❏ Wrote containerized applications, RESTful web microservices, and APIs with Spring Boot and Java
- ❏ Leveraged: Apache Spark (PySpark), Spring Boot, Java, Docker, Kubernetes, SQL, PostgreSQL, MongoDB, PyTorch

Columbia University
Bioinformatics Researcher (Computational Genomics), with Dr. Itsik Pe'er (Jan 2020 – Feb 2021)
- ❏ Applied neural networks (PyTorch) to predict 3 phenotypes of rats based only on genetic variants (SNPs) in DNA.
- ❏ Simulated rat genomes to create additional data with generative adversarial networks (GANs), improving accuracy by 15%
- ❏ Utilized the High-Performance Computing cluster to leverage CUDA GPUs, interfacing with PyTorch Lightning
- ❏ Presented results in Columbia University's Computer Science Research Colloquy

National Science Foundation Physics REU at University of Illinois Urbana-Champaign
Undergraduate Researcher (Machine Learning), with Dr. Joaquin Vieira (May 2019 – Aug 2019)
- ❏ Implemented convolutional neural networks with Python (TensorFlow) to predict gravitational lensing parameters several million times faster than traditional methods
- ❏ Added functionality for predictive modeling with custom architectures, ResNets, Inception-v4, AlexNet, and Overfeat

Columbia University
Undergraduate Researcher (Astrophysics), with Dr. Marcel Agüeros (Sep 2018 – May 2019)
- ❏ Performed spectral reduction, a method for correcting artifacts and instrumental defects in stellar spectra
- ❏ Built fluency with Linux / UNIX, scripting with BASH and Python, and management of large datasets

National Science Foundation Physics REU at Lehigh University
Undergraduate Researcher (Biophysics), with Dr. Slava Rotkin (May 2017 – Sep 2017)
- ❏ Developed techniques for localization of single-wall carbon nanotubes inside of C17.2 neural stem cells.
- ❏ Worked extensively with Raman spectroscopy to analyze the effects of nanotube concentration on cell health

PROJECTS

RL Memory | [code] | [report] | [video]
- ❏ Efficient transfer learning in the deep reinforcement learning setting using Transformers and ConvNets (PyTorch)

Langevin Dynamics for Neural Network Optimization | [code] | [report]
- ❏ Bayesian neural network implementations (PyTorch) for algorithms such as SGLD and pSGLD.

Banknote Fraud Detection | [code]
- ❏ Wrote a decision tree algorithm from scratch that outperforms Scikit-learn's given the same tree depth.

Algorithmic Stock Trading
- ❏ Built an automated trading approach that blends NLP with indicator analysis by training a news sentiment for predictions
- ❏ Models bring about consistent alpha and ROI (20%+) in paper trades and backtests; classification accuracy is above 90%.
- ❏ Tools: PyTorch, RNNs, Transformers, Alpaca API, NLTK, Gensim

OTHER SKILLS/INTERESTS: Japanese (advanced/fluent), saxophone, piano, guitar, reading, long-distance running