Unique Divine

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Unique-Divine.github.io

linkedin.com/in/unique-divine/

github.com/Unique-Divine

EDUCATION

Columbia University	**New York, NY**

M.S. Applied Mathematics (Anticipated 2021)
B.S. Applied Physics, minor in Applied Mathematics (GPA: 3.4) (May 2020)

Susquehanna University (3-2 dual degree program with Columbia University) — **Selinsgrove, PA**

B.S. Physics, minor in Computer Science (GPA: 3.8) (May 2018)

Relevant Coursework:
- ❏ **Graduate Courses**: Machine Learning for Data Science, Partial Differential Equations, Probability and Statistics, Machine Learning with Applications in Finance, Decision Making and Reinforcement Learning
- ❏ **Undergraduate Courses**: Probability Theory, Principles of Computer Science (Python), Computational Linear Algebra with Python Labs, Discrete and Combinatorial Mathematics

TECHNICAL SKILLS

Programming: Python (proficient, 5 yrs), Bash/Shell, Git, SQL, MATLAB, Linux (Ubuntu), C++
Libraries: PyTorch, Keras, TensorFlow, Scikit-learn, NumPy, Pandas, Matplotlib, SciPy, Ignite, Skorch

PROJECTS

Neural Networks for Gravitational Lens Modeling (May 2019 – July 2020)
- ❏ Applied deep learning to recover lens parameters upwards of several million times faster than traditional methods
- ❏ Added functionality for predictive modeling with custom CNNs in addition to Inception-v4, AlexNet, and Overfeat
- ❏ Utilized: PyTorch, TensorFlow, Python, MATLAB

Click-Through Rate Prediction with Stochastic Gradient Descent (June – July 2020)
- ❏ Determined whether advertisements from CriteoLabs, a multinational digital marketing company, would be clicked
- ❏ Worked end-to-end, leveraging statistical methods for data cleaning, feature engineering, and algorithm tuning
- ❏ Utilized: Python (NumPy, Pandas, Matplotlib), Pegasos, Logistic Regression, SVMs

Algorithmic Stock Trading (May 2020 – Present)
- ❏ Successfully applying a novel approach that blends natural language processing with traditional financial factors
- ❏ Achieve average ROI between 20-150% in one year backtests, using Alpaca's API for real-time stock trading
- ❏ Utilize: PyTorch, Keras & TensorFlow, RNNs (LSTM), MLPs, Quantopian, Reinforcement Learning

For additional information and projects: github.com/Unique-Divine

EXPERIENCE

Columbia University

Bioinformatics Researcher (Computational Genomics), *with Dr. Itsik Pe'er* (Aug 2020 – Present)
I apply neural networks to predict whether patients have inheritable diseases based on genetic variants (SNPs), transcriptome wide associations (TWAS), and other factors. I investigate the viability of deep learning as a replacement for traditional polygenic risk metrics. Recent work involves using generative adversarial networks to simulate the genome in an attempt to have more plentiful training data and higher NN performance.

Undergraduate Researcher (Astrophysics), *with Dr. Marcel Agüeros* (Jan – May 2019)
Performed spectral reduction, a method for correcting artifacts and instrumental defects in stellar spectra, with Pyraf, building fluency with BASH scripting.

University of Illinois Urbana-Champaign Physics REU

Undergraduate Researcher (Machine Learning), *with Dr. Joaquin Vieira* (May – Aug 2019)
Developed, trained, and implemented convolutional neural networks that predict gravitational lensing parameters for use in cosmology research with Python (TensorFlow).

Lehigh University Physics REU

Undergraduate Researcher (Biophysics), *with Dr. Slava Rotkin* (May – Aug 2017)
Developed techniques for localization of single-walled carbon nanotubes inside of C17.2 neural stem cells
Worked extensively with Raman spectroscopy to analyze the effects of concentration size on cell health

Susquehanna University

Undergraduate Researcher (Quantum Physics), *with Dr. Carl Faust* (Jan – May 2018)
Analyzed interacting states of ultracold NaCs molecules, creating a relational database (in Excel) in order to quickly parse information from experimental results

Teaching Assistant & Tutor: Courses: Calculus, Physics I & II, Astrophysics I (Aug 2016 – May 2018)

OTHER SKILLS: Japanese (advanced/fluent, ~3yrs), Saxophone, Computer Vision, NLP, Microsoft Excel