

Christopher Pedretti

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SKILLS

- Python, SQL, Java, C, HTML, CSS, Machine Learning (TensorFlow), Deep Learning, NLP, Computer Vision, GitHub
- Microsoft Excel, Financial Modeling, Technical Analysis, Derivatives

COURSEWORK

- Data Mining, Neural Networks, Generative AI, Database Management
- Financial Modeling, Investment Analysis, Financial Markets and Institutions

PUBLICATIONS

- Enhanced Prediction of Detonation Velocity in Energetic Molecules Using Multimodal Data Fusion and Machine Learning (Work in progress)
- Language Model Crossover: Variation through few-shot prompting (Capstone project, work in progress)

PROJECTS

AI PROJECTS |

- **Autoencoder for Handwritten Digits (MNIST):** Designed a basic AE trained on the MNIST dataset to generate handwritten digits.
- **Feed Forward Neural Network:** Built a basic neural network for predictive tasks.
- **Convolutional Neural Network:** Created a CNN to predict Total Solar Irradiance of the Sun.
- **Reinforcement Learning:** Developing an RL agent to play Flappy Bird.
- **LSTM Network:** Applied LSTM to predict Bitcoin and Ethereum gas prices.
- **Language Model Crossover:** Utilized few-shot prompting to create generative models for code, text, and images.

EDUCATION

AMERICAN UNIVERSITY (AU)

Bachelors of Science in **Computer Science** | Minor in Finance

Expected: Dec 2024 | Washington DC, USA

Major GPA: 3.5

EXPERIENCE

AMERICAN UNIVERSITY | RESEARCH ASSISTANT | SPRING 2024 – PRESENT

- Conducted research on the application of ML and NLP for discovering energetic materials. Handled multi-modal data processing, model development, and performance evaluation.
- Automated 75 trials across three experiments.
- Co-authored research report analyzing results.

NIYA CAPITAL | INTERN | SPRING 2024

- Assisted in the due diligence of live venture capital investment opportunities.
- Wrote memos to investors on active portfolio updates.
- Supported partners in modeling of potential transactions.

ALGORITHMIQ | INTERN | SUMMER 2023

- Helped debug and test new bugs in novel and proprietary quantum computing software for drug discovery.

BLUE GLASS CAPITAL | INTERN | SPRING 2023

- Pitched macroeconomic trends for potential investment opportunities.
- Authored direct outreach memorandums to source deals.
- Performed company valuation to assess prospective returns.

FINANCE PROJECTS |

- **WACC Calculator:** Developed a program to calculate the WACC of a business for DCF model.
- **Amortization Table:** Created an application to generate amortization tables for loans.
- **Dividend Discount Model:** Translated financial DDM model to Python to analyze the present value of expected future dividends.
- **Portfolio Optimization Application:**
 - Yahoo Finance API
 - Portfolio Variance (Minimum Mean)
 - Monte Carlo Analysis
 - Stock Correlation Matrix
 - Rolling Volatility
 - Efficient Frontier
- **Sentiment Analysis for Earnings Calls:** Wrote a program using ChatGPT API calls to generate sentiment about a recent corporate earnings report and call transcript.
- **Ethereum Trading Bots:** Developed bots using on-chain and off-chain components to determine profitable arbitrage opportunities using flash loans.
- **Forex Trading Bot:** Developing a bot using technical analysis and API calls to the Oanda broker.