Christopher Pedretti
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OBJECTIVE

Aspiring Machine Learning Engineer with a strong foundation in computer science and finance, seeking opportunities to leverage expertise in data analytics, neural networks, and artificial intelligence.

EXPERIENCE

Research Assistant, **American University,** Washington, DC   May-2024 – *Present*
- Project: Machine Learning and Natural Language Processing Approach for Energetic Materials
- Conducted research on the application of machine learning and natural language processing techniques for the discovery of energetic materials. Responsibilities included multi-modal data processing involving text, images, and chemical information, model development, and performance evaluation to improve efficiency and predictive capabilities for energetic materials.
- Automated 75 trials across three experiments to compile in one runtime

Intern, **Niya Capital**, Dubai   *January 2024 – April 2024*
- Assisting in the due diligence process of live deals.
- Writing monthly memos to investors on updates of active portfolio investments.
- Shadowing partners in potential new deals

Intern, **Algorithmiq,** Helsinki, Finland   *August 2023*
- Helped debug and test for new bugs in quantum computing software for drug discovery under development under mentorship of lead engineer.

Intern, **Blue Glass Capital,** Washington, DC   *January 2023 – April 2023*
- Pitched macroeconomic trends which may foster potential investment opportunities.
- Authored direct outreach utilized in deal sourcing.
- Performed company valuation to assess prospective returns.

Intern, **GAMCO Investors**, Rye, NY   *May 2019 – June 2019*
- Developed sorting and filing system for over 1000 ballots, annuals, and proxy statements for portfolio companies.
- Created and maintained an excel spreadsheet to track the inflow of mail to be processed and sorted each day.

Intern, **First Data Corporation,** Jersey City, NJ   *July 2017 – July 2017*
- Performed general breach research in phishing and credit fraud sites.
- Drafted a report on recent major website breaches.
- Shadowed employees in numerous security nodes.

CS PROJECTS
Finance Projects:

- **Weighted Average Cost of Capital Calculator:** Developed a tool to calculate the WACC for businesses.
- **Amortization Table:** Created an application to generate amortization tables for loans.

- **Discounted Cash Flow Dividend Discount Model:** Built a model to analyze the present value of expected future dividends. Also wrote a multi-stage DDM and a Gordon Growth Model with similar functionality.
- **Portfolio Optimization App:**
  - Variance (Minimum, Mean)
  - Capital Asset Pricing Model
  - Monte Carlo Analysis
  - Correlation Matrix
  - Rolling Volatility
  - Efficient Frontier
- **Generative Sentiment Analysis for Earnings Calls and Reports:** Implemented an AI-based sentiment analysis tool for earnings reports and call transcripts.
- **Basic Ethereum Trading Bots:** Developed bots that utilize both on-chain and off-chain components to determine profitable arbitrage opportunities using flash loans.
- **Forex Trading Bot:** Currently developing a bot using technical analysis and API calls to Oanda broker.

AI Projects:

- **Autoencoder for Handwritten Digits (MNIST):** Designed and trained an autoencoder for digit recognition.
- **Feed Forward Neural Network:** Built a basic neural network for various predictive tasks.
- **Convolutional Neural Network:** Created a CNN to predict Total Solar Irradiance of the Sun.
- **Flappy Bird Reinforcement Learning:** Currently developing an RL agent to play Flappy Bird.
- **Long Short-Term Memory Network:** Applied LSTM to predict Bitcoin and Ethereum prices.
- **Language Model Crossover Project:** Utilized few-shot prompting to create generative models for code, text, and images.

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:** Work in progress

EDUCATION
American University, Washington, DC   *Expected Dec 2024*
Bachelor of Science in Computer Science; Minor in Finance.
Major GPA: 3.5
Relevant Coursework: Data Mining, Neural Networks, Generative AI, Database Management, Financial Modeling, Investment Analysis, Financial Markets and Institutions

SKILLS AND INTERESTS

- Python, SQL, Java, C, HTML, CSS, LaTeX, Machine Learning (TensorFlow), Deep Learning, Natural Language Processing, Computer Vision, Microsoft Excel, Financial Modeling, Technical Analysis.