# Andrew Sheha

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## Education

**Florida Polytechnic University | IEEE | SHPE | ColorStack |** **August 2022 – May 2026**
Bachelor of Science in **Electrical Engineering** — Bright Futures Scholar, Full Scholarship | *Lakeland, Florida*

## Experience

**Blockhouse Capital** | Quantitative Research Intern | **August 2024 – Present**

- Creating reward functions for trading models on our execution platform to provide transparent pricing for customers.

**Arch Capital Management** | Quantitative Research Intern | **August 2024 – Present**

- Utilizing natural language processing and information theory to general signal to trade energy derivatives.

**Microsoft** | AI Software Engineering Intern | **May 2024 – August 2024**

- Software engineering intern in Microsoft's AI ERG Department working on Copilot for Finance.
- Designed and integrated a system to quantify how "good" a prompt is using entropic differences and ground truth elicitation. It was over 400% as accurate when compared to other scoring metrics.
- Upgraded email summarization system to integrate ERP data with an information based approach to dynamically lookup and alter summaries based on the information contained.

**kepler3 Inc.** | Quantitative Developer | **October 2023 – December 2023**

- Prototyped and built cyclic prediction software for options trading in Python and C++
- Conducted a comprehensive analysis of risks, leveraging statistical models to deeply understand impacts of current events, federal policy, and popular consensus using NLP and statistical machine learning techniques on markets at scale
- Provided data analysis at a large scale and presented findings to major stakeholders. Directly supported traders by identifying hedging opportunities within options data.

**Stanford Artificial Intelligence Laboratory** | Research Assistant | **September 2023 – Present**

- Researching new mechanisms for learning from human feedback with guarantees of truthfulness
- Developing an "oversight agreement mechanism" to enable LLMs to self-evaluate and adhere to moral standards
- Funded by OpenAI, Microsoft, and the NSF with support from Stanford's Existential Risk Initiative

**Bluepond Capital** | Machine Learning Intern | **July 2023 – September 2023**

- Developed a new in-house OCR tool to allow LLM's to understand unstructured text within insurance documents
- Lead the intern team's innovation to allow for better LLM integration using LangChain, FAISS, and OpenAI Azure.

**ten9** | Machine Learning Intern | **September 2020 – June 2021**

- Developed a feature to remove background noise from live audio feed using Tensorflow and Python with a GAN

## Publications

**Sheha, et al.** *"Implementability of Information Elicitation Mechanisms with Pre-Trained Language Models." ICML 2024 Workshop on Theoretical Foundations of Foundation Models*, 2024.

## Selected Projects

**IMC Prosperity Trading Competition** **April 2024 - May 2024**

- Scored top 1% out of over 9000 teams worldwide. Developed an adaptable and theoretically sound trading algorithm.

**Convolutional Neural Network Implementation on FPGA** **February 2024**

- Designed, implemented, and optimized a CNN to classify the MNIST dataset using pure circuit logic in Verilog

**Farnsworth Nuclear Reactor** **December 2021**

- Built a fully functional Farnsworth Nuclear Reactor and reached an internal temperature of over 10 million Kelvin

## Technical Skills

**Languages**: Python, Java, C/C++, HTML/CSS, JavaScript, MATLAB, SQL, Mojo, Verilog, Z3
**Software**: Tensorflow, PyTorch, Keras, Pandas, NumPy, OpenAI, SkLearn, OpenCV2, Transformers, Bloomberg Terminal
**Hardware**: Raspberry Pi, Microcontrollers, Circuit/PCB Design, Oscilloscopes, Digital Multimeters, FPGA

## Leadership | Extracurricular

**Jane Street** | *IN FOCUS Program — **Trading Track*** | **January 2024**

- Learned about trading, game theory, and machine learning at Jane Street's NYC office.

**Microsoft** | *TEALS Volunteer Teacher — **AP Computer Science A*** | **July 2023 – May 2024**

- Lead teaching team of three to serve and teach diverse students computer science fundamentals with Java

**NASA** | *L'SPACE Mission Concept Academy — **Project Manager*** | **October 2023 - December 2023**

- Lead 18 fellow students on Preliminary Design Reviews for mission concepts related to NASA's Lucy Mission