

EDUCATION

University of Michigan, Ann-Arbor

Fall 2022 – Spring 2024 (Expected)

B.S. in Computer Science, Merit Scholar

EXPERIENCE

AbbVie

Machine Learning Intern | May 2022 - Present

- New Biological Entities (NBE) Analytical R&D Group
- Developed SVM, hierarchical clustering, and CNN models to categorize peptide mapping data of antibody drug conjugates (ADC)
- Saved 1000s of hours for AbbVie research scientists and analysts across the ADC development pipeline
- Presented research at key internal AbbVie cross-departmental joint poster session to an international audience of ~300 research scientists and VPs. Project garnered interest from AbbVie's Chief Scientific Officer, Thomas Hudson

Quant

Head of Research | Sept 2021 - Present

- Leading research in de-correlated signals in the equity space
- Head of research team in developing volatility surfaces for selecting underlying/ETFs for hedging purposes
- Overseeing current expansion and serving as President of Quant at the University of Michigan, Ann-Arbor

Bedrock Assets

Software Engineer Intern | Feb 2022 – Apr 2022

- Engineered a live market data trading signal generation server using Python and WebSockets
- Developed in-house REST API using Tornado Framework integrated with AWS S3 and MySQL databases

CERN

Research Assistant | Oct 2020 – Jun 2021

- Built from scratch and benchmarked frequency/time domain convolutional neural networks for multi-parameter estimation of binary black hole mergers from gravitational wave signals
- Results used in ongoing research at CERN following “*Deep Learning Merger Masses Estimation from Gravitational Waves*” and “*Deep Learning Gravitational Wave Detection in the Frequency Domain*” papers

smartnUp EdTech

Machine Learning Engineer Intern | Jun 2020 – Dec 2020

- Developed facial recognition attendance system for deployment in schools in Jaipur, India for approximately 2,000 students
- Developed pipeline for real-time facial recognition on CPU and android devices using Fast-MTCNN and TVM stack
- Developed integrated backend PostgreSQL database for pipeline

AWARDS

USA Computing Olympiad

2021 Gold Division

Nokia Bell Labs NJ Regional Science Fair

2020, 2019 Regeneron ISEF

- “An Alternative to Conventional Cloaking Methods: Macroscale Digital Cloaking via ghostNet
- 3rd place Engineering Division, 2x Winner Office of Naval Research Naval Science Award, Geoscience Award

American Pre-College Philosophy Olympiad

2019 U.S. National Finalist

SKILLS

Machine Learning: Computer vision, NLP, financial machine learning, convolutional neural networks (CNNs), recurrent neural networks (RNNs), long-short temporal memory (LSTMs), transformers, hierarchical temporal memory (HTM)

Cybersecurity: Reverse engineering, fuzzing, malware Analysis, static code analysis, web application security, OSINT

Foreign Language: Fluent in Korean & professional proficiency Mandarin Chinese

TOOLS // PLATFORMS

Programming Languages: Python, Java, C/C++, Rust, Go, JavaScript, Go, x86/x86-64 ASM, Scala, Bash

Frameworks: NumPy, Pandas, Scikit-Learn, TensorFlow, Keras, Node.js, Vue.js, Three.js, Tornado, Flask, gRPC

Software: Git, MySQL, PostgreSQL, MongoDB, Kubernetes, Docker, IDA Pro, REST APIs, GraphQL

PROJECTS

Shepherd – Python, Alpaca API, MongoDB, REST API:

- a Python algorithmic trading bot with a command-line interface and REST API.
- Wrote custom strategy class for integration with the REST API. Utilized custom strategy class to implement a simple example strategy (Payday Anomaly).

FCNN – Python, Keras, TensorFlow, PyCBC:

- implemented a time domain and frequency domain convolutional neural to predict mass, spin, and eccentricity of black holes in binary merger events.
- Models used in internal research at CERN at the intersection of ML and gravitational astrophysics.

m00nNet – Go, NumPy:

- an in-progress simple deep learning library written in Go from scratch for educational purposes.
- Implemented tensors based on NumPy ndarrays including important tensor operations, layers, loss functions, optimizers, and neural nets.