Royce Moon

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EDUCATION

University of Michigan, Ann-Arbor
Fall 2022 – Spring 2025
B.S. in Computer Science, Minor in Mathematics
Merit Scholar

EXPERIENCE

AbbVie
Machine Learning Intern | Apr 2022 – May 2023
- New Biological Entities (NBE) Analytical R&D Group
- Developed SVM, hierarchical clustering, CNN, and XGBoost 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

Quant Illinois
Advisor/Board of Directors Member | Sep 2021 - Present
- Advising research in de-correlated signals in the equity space
- Former Head of Research in developing a PyTorch backtesting framework for mean-reverting portfolios using OU maximum likelihood estimation
- 501(c)3 Non-Profit appointed board member

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 on AWS

CERN
Research Intern | Oct 2020 – Jun 2021
- Built from scratch and benchmarked frequency and time domain CNNs 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: Deep learning, NLP, computer vision, unsupervised learning, representation learning, manifold learning, autoencoders

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

Foreign Languages: Fluent in Korean, professional proficiency in Mandarin Chinese

TOOLS

Programming Languages: Python, C++, C, Java, Rust, Huff, Solidity, Bash

Frameworks: NumPy, Pandas, Scikit-Learn, PyTorch, TensorFlow, Keras, Caffe, Flask

Software: Linux, Unix, Git, MySQL, PostgreSQL, MongoDB, AWS, Kubernetes, Docker, IDA Pro, REST APIs

PROJECTS

Laplace – Rust, Huff, Solidity
- A Uniswap V2/V3 generalized MEV trading bot implemented mainly in Rust
- Huff and Solidity contracts for unconventional gas optimizations
- Concurrent EVM simulations for locating sandwich opportunities
- Token dust, poison token checker, and circuit breaker
- Statistical arbitrage, sandwich trading, liquidation, flashloan, and front-running strategies

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 strategy class to implement a simple example strategy (Payday Anomaly)

FCNN – Python, Keras, TensorFlow, PyCBC
- Implemented time and frequency domain CNNs to predict mass, spin, and eccentricity of black holes in binary merger events