Arvid Lunnemark

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Education

Massachusetts Institute of Technology Cambridge, MA

Bachelor of Science in Mathematics (18) and Computer Science (6-3) *September 2020 – May 2024*

- GPA: 5.0/5.0
- Selected Coursework: Algorithms (6.854, 6.890, 6.046), Theory of Computation (18.404), Systems (6.004, 6.033, 6.824), Performance (6.172), Software (6.031), Probability and Inference (18.600, 6.036, 6.437), Differential Equations (18.303), Algebra (18.701), Real Analysis (18.100Q), Political Science (17.01, 17.03)
- Awards: International Mathematical Olympiad: Gold 2018; International Olympiad of Informatics: Silver 2017

Experience

Jane Street June 2023 – August 2023

Quantitative Trading Intern *New York, NY*

- Implemented and analyzed diverse trading strategies in JS-proprietary training with manual and algorithmic trading games; 20 mock games covering strategies such as ETF arbitrage and lag signals
- Engaged in trading strategy elective, with 6 deeper mock situations such as working with multiple currencies or planning for central bank announcements
- Analyzed brokerage counterparties in Toronto stock exchange on index rebalance dates; observed overrepresented participants to conclude certain brokers were executing on behalf of ETF issuers
- Used Python and Excel to build a model to explain option prices under certain conditions.

Citadel LLC May 2022 – August 2022

Quantitative Researcher Intern *Chicago, IL*

- Market making team: Two projects on high frequency trading stock price predictive models.
- Model selection: Investigated new high-dimensional feature selection in linear models for best model and best model path.

QuantCo June 2021 – August 2021

Software Engineering Intern *Cologne, Germany*

- Wrote performance tests for a Go and Gunicorn server to analyze unexplained timeouts. The work resulted in a model of the optimal server configuration as a function of server load, and was incorporated into production.
- Devised and implemented an algorithm for grouping health claims more cost-effectively, modeling the problem as an instance of MinCostSAT.

Research

Learning and Intelligent Systems Group | *Advisor: Leslie Kaelbling* Spring 2022

- Rigorously formulated and solved estimation and learning problems in task and motion planning.
- Formulated the problem of belief propagation and belief-space planning in uncertain multi-modal domains.
- Developing a solution that propagates mixtures of truncated Gaussians using a combination of Kalman and particle filters.

Supertech Group | *Advisor: Dr. Tao B. Schardl* Spring 2021

- Added support for ForRange loops in the OpenCilk compiler for parallel C++ code. Code can be found at: https://github.com/arvid220u/opencilk-project

Projects

Speedafari

- Utility to speed up web browsing by blocking ads and scripts. 100,000 downloads, out of which 4,000 were paid.
- Well-received in the reputable blogs MacStories and Lifehacker (apps.apple.com/app/id1030762703).

Technical Skills

Languages: Python, C/C++, Java, SQL (Postgres), JavaScript, HTML/CSS, R
Frameworks: React, Node.js, Flask, JUnit, WordPress, Material-UI, FastAPI
Developer Tools: Git, Docker, TravisCI, Google Cloud Platform, VS Code, Visual Studio, PyCharm, IntelliJ, Eclipse
Libraries: pandas, NumPy, Matplotlib