AUBREY CLARK

aubrey-clark.com | github.com/abclark | aubs.bc@gmail.com | San Francisco, CA

WORK

Data Scientist | G Google Global Infrastructure   April 2023 –
- Built ML classifiers that predict optical component failures across 1M+ devices in Google's network
- Redesigned the capacity planning algorithm to reduce unnecessary network builds by 10%
- Built ordering models that cut YouTube CAPEX by over $30M
- Tuned congestion control parameters for backbone transport protocols using traffic telemetry

Data Scientist | 🐦 Twitter   August 2021 – March 2023
- Designed a critical path algorithm over distributed traces to find bottlenecks in Twitter's serving stack
- Rewrote the spam classifier to use reply timing, cutting false positives on legitimate accounts
- Ran experiments on cluster scheduling that reduced compute costs

Data Scientist | 🔷 Wealthfront   August 2018 – July 2021
- Designed the optimization engine for Wealthfront's automated financial advisor: a stochastic mixed-integer program solved with Benders decomposition, for 250,000 users
- Built an internal order matching system that netted client trades before routing to market, reducing transaction costs

Research Fellow | 🛡 University of Cambridge   2017 – 2018
- Game Theory, Information Economics. Research in market design and allocation theory

EDUCATION

Ph.D., Economics, 🛡 Harvard University   2017
Mechanism Design. Committee: Eric Maskin (Chair), Oliver Hart

B.Sc. Mathematics / B.Econ., 🛡 University of Queensland, Australia   2009
First Class Honours, University Medal

PROJECTS

- **Communication Systems from Scratch**: BGP, TCP/IP, Audio Modem, QUIC, BBR, Protocol Buffers, HTTP/3, and gRPC
- **Financial Planning in the AI Era**: An AI financial advisor built from bank statements and a single prompt document
- **Algorithmic Mechanism Design**: Probabilistic Serial and Constrained Birkhoff-von Neumann algorithms for fair allocation

RESEARCH

Contracts for Acquiring Information. Clark, A. and Reggiani, G. arXiv:2103.03911, 2017
Capacity Constraints in Principal-Agent Problems. Clark, A. arXiv:2412.01760, 2017
Core Equivalence with Large Agents. Clark, A. arXiv:2103.05136, 2017

PROFICIENCIES

Machine learning: Python, SQL   Rustier/infrequent: C++, Scala, R, Julia