AUBREY CLARK

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WORK

Data Scientist | Google Global Infrastructure April 2023 –

- Found correlation in network traffic and used it to cut the capacity build signal by 10%
- Built an ML system that predicts optical failures from device telemetry before they cause outages
- Built stability metrics for the capacity planning solver, root-causing instability by comparing solver and router pathing
- Built pipelines and metrics that trace traffic engineering events back to physical layer failures
- Using power growth forecasts as an early warning system for fiber infrastructure planning

Data Scientist | Twitter August 2021 – March 2023

- Found bottlenecks in Twitter's serving stack by tracing the critical path through distributed systems
- Rewrote the spam classifier to use reply timing, cutting false positives on real accounts
- Ran experiments on cluster scheduling that cut compute costs

Data Scientist | Wealthfront August 2018 – July 2021

- Wrote the optimization engine behind Wealthfront's robo-advisor: a stochastic program solved with Benders decomposition
- Built an order matching system that netted client trades internally before sending them to market

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

SKILLS

Machine learning · Optimization · Infrastructure · Mechanism design · Operations research

Day-to-day: Python, SQL, C++, Shell · Infrequent: Rust, Scala, R, Julia