

# AUBREY CLARK


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## WORK

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**Data Scientist** |  Google Global Infrastructure April 2023 –

- Built an ML system that predicts optical failures from device telemetry before they cause outages
- Found correlation in network traffic and used it to cut the capacity build signal by 10%
- 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
- Building an early warning system that forecasts fiber infrastructure needs from upstream power signals

**Data Scientist** |  Twitter August 2021 – March 2023

- Identified latency bottlenecks in Twitter's serving stack by tracing requests through distributed systems
- Rewrote the spam classifier to use reply timing, cutting false positives on real accounts
- Ran experiments on cluster scheduling to improve utilization

**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

- Research in information economics

## EDUCATION

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**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

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- **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

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*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

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

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