

# AUBREY CLARK

[aubrey-clark.com](http://aubrey-clark.com) | [github.com/abclark](https://github.com/abclark) | [aubs.bc@gmail.com](mailto:aubs.bc@gmail.com) | San Francisco, CA

## WORK

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**Data Scientist** |  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

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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

Python, SQL, C++, Shell · Scala, R, Julia