Matt Crane

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Summary:

I am a software engineer currently working at Airbnb on the machine learning infrastructure team. I am deeply interested in the machine learning space, with a focus on building efficient infrastructure to support large scale machine learning system needs.

Experience:

Software Engineer, Airbnb, CA, USA **January 2024–present**

✓ Developing the internal ML Infrastructure platform and tooling. Focusing on the MLE developer experience.

Machine Learning Engineer, Instacart, CA, USA **November 2021–January 2024**

✓ Developed a multi-year vision for the machine learning infrastructure team, which served as the basis for cross-company initiatives.

✓ Mentored junior engineers on the team through career development to senior levels.

✓ Re-wrote key feature store infrastructure in Rust resulting in: 10x p99 latency improvement across 10x fewer instances. The store served 42 million features per second with a 10ms p99 latency.

✓ Realized multi-million dollar savings by improving and documenting engineering best practices.

Research Scientist, Meta *(fka Facebook Inc.)*, CA, USA **July 2018–November 2021**

✓ Led a team of eight engineers across multiple teams to develop and implement a new data model for the ads delivery system. This model serveed 20% of Meta ads revenue, and unlocked 1.8% additional revenue through infrastructure savings.

✓ Led the development of a new rule-/hint-based advertising product with a small team of senior engineers, proactively keeping XFN partner teams and leadership updated. Alpha release showed improved advertising performance (66% ROI), and positive sentiment (85%) from advertisers.

✓ Worked with team to identify causes of unsustainable/unstable ad delivery and unpredictable performance. Engineered solutions to these issues, which included large scale feature and model migrations. Mentored an intern to return offer as a part of this project. Resulted in 5% revenue and overwhelming gains in business-sensitive advertiser experience metrics.

✓ Designed and implemented an extension of the Meta ads experimentation platform to support arbitrarily segmented demand-side experiments.

Postdoctoral Fellow, University of Waterloo, ON, Canada **March 2016–February 2018**

✓ Investigated machine learning reproducibility and replicability of NLP and information retrieval systems.

✓ Taught CS241, an undergraduate course in building compilers.

Skills:

Languages: strong: `Rust`, `Python`, `C++`

Languages: moderate: `SQL`, `Go`, `C`, `Typescript`, *etc.*

Tools: `Docker`, `Kubernetes`, `ECS`, `Terraform`

Systems: `AWS`, `Datadog`, `Snowflake`

Troubleshooting and debugging of large, complex systems.

Education:

PhD — Computer Science, University of Otago, New Zealand **February 2012–March 2016**

Thesis: *Improved Indexing & Searching Throughput* `http://ourarchive.otago.ac.nz/handle/10523/6223`

Investigating ways to improve the efficiency of indexing and searching of web-scale collections without impacting on the effectiveness of the results. During my candidature I was an active member of the academic community, presenting and reviewing at multiple SIGIR, ICTIR, CIKM, and ADCS conferences and workshops.

MSc (Thesis Only) with Distinction — Computer Science, University of Otago **October 2009–May 2011**

Thesis: *The New User Problem in Collaborative Filtering* `http://otago.ourarchive.ac.nz/handle/10523/1938`