Matt Crane

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Work Experience:

Research Scientist, Facebook Inc., CA, USA **July 2018–present**

Focused on solving advertiser facing issues within the delivery system, including diagnosing systemic inefficiencies in ranking and delivery systems, large scale back-end migrations to unblock scaling of products, and development of new products. Served as an internal hiring point of contact for the team, as well as managing and mentoring interns and being a ramp-up buddy for new engineers, both senior and junior, to both the team and org.

—Led a team of seven engineers to migrate ads delivery to a new data model for a single ads product. This project spanned the whole ads delivery system and multiple XFN teams. Defined the project roadmap, timeline, and goals alongside XFN partner teams. Designed key infrastructure components, delegating effectively across this team.

This data model serves % of Facebook ads revenue, and unblocked % additional revenue through scaling and reduced serving infrastructure requirements by %. The project serves as the basis for the entirety of ads delivery to migrate data models, unlocking a further % additional revenue, and further reducing serving infrastructure by %.

—Developed a new rule-based delivery product that allows advertisers to express demographic constraints and hints for each asset within an ad. Led a small team of senior backend engineers, communicating engineering updates and issues encountered to both XFN partner teams, and area leadership. Alphas showed majority improved performance (%), and overwhelming positive sentiment (%).

Identified a key issue that affected % of Facebook ads revenue, and was existential for multiple projects across multiple teams.

—Designed and implemented an experimentation platform for arbitrary demand segmented experiments, that did not need budget controls. This platform supplemented, and bought advertiser experience metrics to, the standardised pre-existing supply segmented experimentation platform. It has since been used to support experiments that have shipped % gains cumulatively.

–Improved the sustainability of an ad campaign performance by investigating all parts of delivery. Analyzed the effect of ranking model state/history, detected when campaigns had entered a sub-optimal state, and tested methods to break that state, and sustain performance.

—Identified the source of large variance observed by advertisers on duplicated campaigns. After root-causing to ranking, and conducting a large-scale feature and model migration, an advertiser facing experiment showed revenue gains of %, alongside other key business-sensitive advertiser experience metrics.

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

Developed a novel anytime, score-safe, document scoring algorithm. Conducted research on reproducibility, and replicability, of information retrieval and machine learning NLP systems. This included software and library versioning, hyper parameter tuning, and hardware level details.

Taught the following courses:

CS241: Foundations of Sequential Programming *(aka Introduction to Compilers)* Fall 2016

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`

Skills:

Programming languages; strong: `C++`, `Python`; moderate: many others, including `SQL`, `Go`, `C`, `Java`.

Troubleshooting and debugging skills of large, complex systems.

Strong written and verbal communication.