Jackie Baek

www.jackiebaek.com
baek@mit.edu

EDUCATION

Massachusetts Institute of Technology — Cambridge, Massachusetts
Ph.D. Candidate in Operations Research — Sep 2016 - Present

University of Waterloo — Waterloo, Ontario, Canada
Joint Combinatorics and Optimization / Joint Computer Science — 2011 - 2016

- Cumulative Average: 93%

RESEARCH EXPERIENCE

Department of Combinatorics and Optimization — University of Waterloo
Undergraduate Research Assistant — May 2015 – Aug 2015

- *Topic:* Approximation Algorithm for Multi-processor Scheduling
- *Supervisor:* Professor Levent Tunçel
- Worked on conjecturing and proving the approximation ratio for an approximation algorithm for the flowtime-makespan problem (minimizing makespan subject to optimal flowtime).
- Proved a tight bound for many special cases on a problem with no progress since 1993.

WORK EXPERIENCE

Bloomberg LP — London, United Kingdom
Software Engineering Intern — Sep 2015 – Dec 2015

- Optimized a financial dashboard written in Scheme, using a *dependency graph* to minimize redundant function calls.
- Reduced latency of processing each trade by 50%.

Snapchat — Venice, California
Software Engineering Intern — Sep 2014 – Dec 2014

- Implemented *deltas* for sending new updates from the server to Snapchat clients.
  - Before, the server would return all data, whether it be new or old, and the clients would replace everything in memory with the server's response.
  - After implementing deltas, the server would only respond with new updates, and the clients would handle this accordingly.
  - Decreased average server response size by 70% and average latency by 30%.

Dropbox — San Francisco, California
Software Engineering Intern — Sep 2013 – Apr 2014

- Worked on the Datastores API which uses *operational transformation* to sync data between various sources.
  - Implemented delta compression, a feature that allowed the API to use disk space linear to the amount of data, rather than linear to the number of operations executed on the data.
  - Built a finite-state machine for Datastores operations to optimally compress the data depending on the various states.

AWARDS

NSERC Undergraduate Student Research Award — Summer 2015

Professional Education Foundation Scholarship, University of Waterloo — Sep 2014
For receiving the highest mark in Algorithms (CS 341).

Dean's Honors List, University of Waterloo — 2011 – 2015
For maintaining an average of 87%+ every semester.

Mathematics National Scholarship, University of Waterloo — 2011 – 2015
Awarded to 15 students entering the Faculty of Mathematics for overall excellence.

SKILLS

Python, C++, LaTeX, MATLAB, Unix

INTERESTS

Travelling, blogging, rock climbing, running