

Employment

National Institute of Informatics, Tokyo **Visiting Researcher** **6/2017-8/2017**

Algorithms for the minimum violation problem

- Designed fast algorithms for a generalization of the graph cut and connectivity problem.
- Gave talks on algorithmic progress across Japan.

Google, Mountain View **Software Engineer** **2/2013-8/2013**

Google Analytics Backend

- Maintained the critical custom filter component. It is used by every single request to Google Analytics. Refactoring by introducing reflections. C++.
- Introduced algorithmic improvements to a load partition problem. Substantial running time reduction from $O(n^2)$ to $O(n)$. C++.
- Solved backward compatibility issues for customers by designing short regular expressions for common tasks. Haskell, Regex.

Education

University of Illinois at Urbana-Champaign **Urbana, IL** **8/2013 – Expected 5/2018**

- PhD in Computer Science, specializing in algorithms.
- Coursework: Machine Learning Theory; Distributed Systems; Algorithmic Game Theory; Approximation algorithms; Combinatorial optimization; Optimization in Networks

Stony Brook University **Stony Brook, NY** **8/2009 – 8/2013**

- B.S. in Mathematics and Applied Mathematics & Statistics with minor in Computer Science
- Coursework: Algorithms; Computational Geometry

Technical Experience

Projects

- **Peer-to-peer distributed lookup service** (2016). Implementation based on Chord. Handles insertion, deletion, node joins and node failures. Python.
- **Connectivity and optimization algorithms in matroids** (2015). Open source project. Implement connectivity and matroid intersection algorithms in SageMath as part of Google Summer of Code. Improved the running time for 4-connectivity computation from $O(n^5)$ to $O(n^{4.5} \sqrt{\log n})$. Python, Cython, Advanced Mathematics.

Languages and Technologies

- Python; Haskell; APL; Java; C++; SQL
- Git; LaTeX;

Additional Experience and Awards

- **Competitions:**
 - **ACM-ICPC Greater NY Region:** 2nd place in 2012.
 - **Dyalog APL Problem solving competition:** 3rd prize in 2013 and 2014.
 - **William Lowell Putnam competition:** Rank 383 in 2010.
- **Teaching:** Lead discussion sessions of 6 algorithms courses.
- **Publications:** Multiple publications in top algorithms conference. 4 SODA, 1 ESA and 1 APPROX. Total 43 citations.
- **Links:**
 - **GitHub:** <https://github.com/chaoxu>
 - **Blog:** <http://chaoxuprime.com>