

Daniel Larkin-York

**Programmer,
Researcher,
Teacher,
Human**

Daniel Larkin-York

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Skills

Programming, Algorithm Design & Analysis, Technical Writing, Public Speaking, Teaching, Project Planning, Language/Framework Flexibility, Code Review

Languages/Tools: C/C++, JavaScript, HTML, CSS, SQL/NoSQL, PHP, Python, Java, Bash, Linux, LaTeX, React/Redux, Polymer, R, more...

Education

Princeton University / Ph.D. & M.A. Computer Science

SEPTEMBER 2011 - JANUARY 2016 / PRINCETON, NJ

Focused on the border of theory and practice, specifically with regard to data structures and graph algorithms. Advised by Robert Tarjan.

University of Illinois / B.S. Computer Science

AUGUST 2007 - MAY 2011 / URBANA, IL

Completed minor in physics and graduated as a James Scholar.

Experience

ArangoDB GmbH / C++ Developer

NOVEMBER 2016 - PRESENT / REMOTE

Worked as a member of the core team focusing on the storage engines, caching, query language, views, and general performance optimization. Particular tasks of interest include: prototyped and helped implement a new storage engine based on RocksDB; developed highly-parallelized caching system.

Recordz, LLC / Co-Founder & CTO

SEPTEMBER 2015 - NOVEMBER 2016 / REMOTE

Translated co-founder's startup idea for a streaming music platform with integrated social features into an actual platform design and architecture. Broke down development process into manageable tasks spread across multiple services with estimated completion times. Began and made solid progress on implementation of platform. Provided cost analysis for development and operations. Helped shape business plan and advised CEO regarding monetization schemes and key demographics.

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Princeton University / Graduate Research Assistant

SEPTEMBER 2013 - SEPTEMBER 2015 / REMOTE

Performed design, analysis, and implementation of several novel algorithms, focusing on data structures and graph algorithms. Published and presented at academic/industry conferences. (See Publications.)

Princeton University / Graduate Teaching Assistant

SEPTEMBER 2012 - JUNE 2012 / PRINCETON, NJ

Taught sophomore-level Java-based data structures and algorithms class during the fall semester, and senior-level algorithms class during the spring. Led discussion and problem-solving sessions, helped design assignments and exams, held office hours, and graded.

University of Illinois / Undergraduate Teaching Assistant

JANUARY 2010 - DECEMBER 2010 / URBANA, IL

Taught junior-level programming studio course aimed at improving development skills. Course focused on best practices, programming paradigms, language flexibility, and general programming maturity. Graded and led small sections of students each week in in-depth code reviews.

Google Summer of Code / Student

SUMMER 2008, 2009, 2011 / REMOTE

Participated in Google-funded internship-alternative designed to allow students to contribute to open-source software projects. Worked each of these summers with a mentor from the participating organizations to implement a new feature in widely-used free software.

2011: x264 - Trellis Optimization for Motion Estimation. Popular video encoding software. Implemented proof-of-concept to test viability. Non-local optimization significantly improved compression efficiency, but ultimately proved too slow for most purposes.

2009: WordPress - Modified Pre-order Tree Traversal. Implemented efficient way to extract entire subtree from hierarchical data such as categories from MySQL database with a single simple query. Led to significant speed-up in related functionality for core WP software.

2008: WordPress - BBXF Project. Established an XML-based standard for bulletin board data and a suite of tools for porting data from one system to another. Supported bbPress, phpBB, and Vanilla forum software.

Publications

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1. Daniel H. Larkin. Compressing Trees with a Sledgehammer. Ph.D. Thesis, Princeton University, 2016.
 2. Daniel H. Larkin and Robert E. Tarjan. Nested Set Union. In *Proc. of the 22nd Annual European Symposium on Algorithms*, 2014.

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3. Daniel H. Larkin, Siddhartha Sen, and Robert E. Tarjan. A Back-to-Basics Empirical Study of Priority Queues. In *Proc. of the 15th Meeting on Algorithm Engineering and Experiments*, 2014.
4. Ashish Goel, Sanjeev Khanna, Daniel H. Larkin, and Robert E. Tarjan. Disjoint Set Union with Randomized Linking. In *Proc. of the 25th Annual ACM-SIAM Symposium on Discrete Algorithms*, 2014.
5. Shiri Chechik, Daniel H. Larkin, Liam Roditty, Grant Schoenebeck, Robert E. Tarjan, and Virginia Vassilevska Williams. Better Approximation Algorithms for the Graph Diameter. In *Proc. of the 25th Annual ACM-SIAM Symposium on Discrete Algorithms*, 2014.

Awards

Graduate Student Teaching Award, Princeton University, 2013.