

David Benjamin Durst
51 Dudley Lane, Apartment #315
Stanford, CA 94305
durst@cs.stanford.edu - (215) 435-3386

EDUCATION

Stanford University, Stanford, CA September 2017 – Present
Degree: Ph.D. Student in Computer Science
Research: Aetherling: Resource-Aware, Space-Time Scheduling
Adviser: Kayvon Fatahalian, Assistant Professor of Computer Science

Princeton University, Princeton, NJ September 2011 – June 2015
Degree: B.S.E. in Computer Science with Certificate (Minor) in Finance, *summa cum laude*
Select Courses: Operating Systems; Functional Programming; Artificial Intelligence;
Probability and Stochastic Systems
GPA: Major: 4.0; Cumulative: 3.95

ACADEMIC RESEARCH

Aetherling: Resource-Aware, Space-Time Scheduling, Ph.D. Research January 2018 – Present
Advisers: Kayvon Fatahalian, Assistant Professor of Computer Science and Pat Hanrahan, Professor of Computer Science

- Creating language for expressing dataflow DAGs that compiles to FPGAs and CGRAs
- Developing type system that ensures all programs compile to efficient implementations
- Implementing and proving correctness of compiler passes that tradeoff throughput and resource consumption
- Designing auto-scheduler that maximizes throughput given hardware resource constraints and scales linearly with amount of resources on target chip

Fyndoro: Image Similarity Based Data Augmentation, Ph.D. Rotation Research Fall 2017
Advisers: Peter Bailis, Assistant Professor of Computer Science and Matei Zaharia, Assistant Professor of Computer Science

- Lowered cost of creating training data sets for image classification through data augmentation
- Explored techniques for training models using transfer learning with few manually labeled images and large amounts of noisy, visually similar data downloaded from Google reverse image search

Beyond3D: Visualizing High-Dimensional Data Sets, Undergraduate Thesis Fall 2014 – Spring 2015
Adviser: Mark Braverman, Professor of Computer Science
<https://david-durst.github.io/DurstThesis.pdf>

- Catalogued available techniques for understanding high-dimensional data sets
- Developed polar parallel coordinates visualization, a novel technique for the coherent, simultaneous visualization of relationships between a response variable and each explanatory variable
- Implemented and evaluated Beyond3D, a tool for exploring data sets with tens to hundreds of dimensions through a combination of interactive visualizations

File System Usage Patterns, Independent Work Fall 2013
Adviser: Kai Li, Professor of Computer Science
<https://david-durst.github.io/DurstIndependentWork.pdf>

- Developed cross-platform file system profiler that reports metrics to central Splunk server
- Ran IRB compliant study of Princeton University students' file system usage patterns
- Concluded that hybrid cloud-local file systems optimal for common usage patterns identified in study

PRESENTATIONS

TopNotch: Systematically Quality Controlling Big Data, Spark Summit East 2016 February 2016
<https://youtu.be/PViAlNq1q5s>

- TopNotch: framework for quality controlling big data through data quality metrics that scale up to large data sets, across schemas, and throughout large teams
- TopNotch's SQL-based interface enables users across the technical spectrum to quality control data sets in their areas of expertise and understand data sets from other areas

I Big Data And You Can Too, Spark-NYC Meetup September 2015
<https://youtu.be/jCX0a6doXEs?t=33m50s>

- Address disparity between current and desired big data user experience
- Demonstrate web application with a scatterplot matrix visualization that allows non-technical users to utilize Spark to analyze large data sets

**WORK
EXPERIENCE**

BlackRock, Inc., New York, NY August 2015 – June 2017
Financial Modeling Group Analyst

- Designed philosophy and led development of TopNotch big data quality control system, managed team of up to 5 developers in US and India
- Architected and implemented frontend and backend for interactive big data visualization system
- Worked with mortgage-backed security (MBS) portfolio managers to model leading indicators of asset performance using loan level data sets
- Developed systems for modeling large financial data sets using Apache Spark

BlackRock, Inc., New York, NY Summer 2014
Financial Modeling Group Intern

- Researched visualization techniques for integrating big data into modeling process
- Implemented software package that visualizes relationships between variables in large data sets
- Worked in 10 person team to create a mock, long-only Russell 1000 portfolio

Bridgewater Associates, LP, Westport, CT Summer 2013
Technical Associate Intern, Research Technology

- Optimized economic models to improve investment research process
- Created profiler that identifies areas of low performance

ZocDoc, Inc., New York, NY Summer 2012
Software Engineer Intern

- Created and led HIPAA compliant testing of software that identifies unused files
- Optimized software development cycle by decreasing compilation wait times up to 83%

**AWARDS
AND
HONORS**

National Science Foundation Graduate Research Fellowship Fall 2017 - Present
Stanford Graduate Fellowship in Science & Engineering Fall 2017 - Present
summa cum laude Spring 2015
Sigma Xi, The Scientific Research Society, Member Spring 2015
Phi Beta Kappa (early induction for 27 members of graduating class) Fall 2014
Accenture Prize in Computer Science Fall 2014
Shapiro Prize for Freshman and Sophomore Academic Excellence Fall 2012 and Fall 2013
Tau Beta Pi, The Engineering Honor Society, Member Fall 2013

**COMMUNITY
AND CAMPUS
ACTIVITIES**

Code/Interactive, a Code.org Partner, Mentor NYC High School Students Fall 2015 – Spring 2017
Teaching Assistant, Operating Systems Fall 2013
Commencement Committee, Princeton Class of 2015 Spring 2014 – Spring 2015
Princeton Club Table Tennis, Vice President (2013-2015) Fall 2011 – Spring 2015

**SELECT
COMPUTER
SKILLS**

Languages: Scala, Haskell, Java, JavaScript, HiveQL, R, OCaml, C
Frameworks and Libraries: TopNotch, Spark, Spark Job Server, YARN, React, Redux, Meteor
Code Samples:

- My GitHub Page: <https://github.com/David-Durst>
- TopNotch GitHub Page: <https://github.com/blackrock/TopNotch>