Arjun Rawal

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Education

University of Chicago, Chicago, IL 2019 - 2020
M.S. in Computer Science. Advisor: Andrew A. Chien
GPA: 3.96/4.00
Master's Paper: *Exploiting Domain-Specific Data Properties to Improve Compression for High Energy Physics Data*

University of Chicago, Chicago, IL 2016 - 2020
B.S. in Computer Science
B.S. in Mathematics
GPA: 3.74/4.00

Skills

- Languages - C, Java, Python, Bash
- Specializations - Distributed systems, parallel processing, system architecture

Professional Experience

SDE I, S3 September 2020 -
Amazon Web Services, Seattle, WA

- Worked on Java based service oriented architecture processing millions of batch jobs on billions of S3 objects per day.
- Led implementation and release of new features enabling 99% cost reduction when encrypting objects in S3.

Grader, Computer Science Department January 2020 - June 2020
Univeristy of Chicago, Chicago, IL

- CMSC 15200 - Introduction to Computer Science II
- CMSC 23010 - Parallel Computing

SDE Intern, S3 June 2019 - September 2019
Amazon Web Services, Seattle, WA

- Worked on Java based service oriented architecture supporting millions of batch jobs on billions of S3 objects per day.
- Designed and implemented new batch operations to allow placing legal protections on S3 objects. Publicly released in October 2020.

Software Development Engineer Intern June 2018 - September 2018
John D. and Catherine T. MacArthur Foundation, Chicago, IL

- Converted and updated Foundation APIs to latest .NET Core and scripted automated stand up of web servers to allow for simple deployments.
- Implemented continuous monitoring of web resources for security and reliability.
- Configured and scripted automated installation and updates for internal foundation computers using active directory.

Software Development Engineer Intern June 2017 - November 2017
Halo Investing, Chicago, IL

- Worked with a team to design and implement a structured notes platform to allow real time pricing, trading, and auctions.
- Developed across the stack in Python, mySQL, Javascript, HTML, and CSS.

Research Experience

Research Assistant, UChicago Databases Group — March 2020 -
University of Chicago, Chicago, IL
Advisor: Raul Castro Fernandez

Research Assistant, Large-Scale Systems Group — June 2018 - June 2020
University of Chicago, Chicago, IL
Advisor: Andrew A. Chien

Publications

Exploiting Domain-Specific Data Properties to Improve Compression for High Energy Physics Data
Arjun Rawal.
University of Chicago Technical Report
TR-2020-03

Programmable Acceleration for Sparse Matrices in a Data-Movement Limited World
Arjun Rawal, Yuanwei Fang, and Andrew A. Chien.
In *IEEE International Parallel and Distributed Processing Symposium Workshops*
DOI:10.1109/IPDPSW.2019.00016
IPDPSW, 2019

Presentations

Programmable Acceleration for Sparse Matrices in a Data-Movement Limited World
Arjun Rawal, Yuanwei Fang, and Andrew A. Chien
Heterogeneity in Computing Workshop (HCW).
Rio de Janeiro, Brazil, March 2019

Posters

Project 38: Accelerating Architecture Innovation into Fieldable Extreme-Scale Systems (A Cross-Agency Effort)
John Shalf, Dilip Vasudevan, David Donofrio, Anastasia Butko, Andrew A. Chien, Yuanwei Fang, Arjun Rawal, Chen Zou, Ray Bair, Kris Keipert, Arun Rodriguez, Maya Gokhale, Scott Lloyd, Xiaochen Guo, Yuan Zeng
SC19: The International Conference for High Performance Computing, Networking, Storage, and Analysis
Denver, CO, November 2019

Accelerating Sparse Matrix Computation Using the UDP/Recoding Engine
Arjun Rawal, Yuanwei Fang, and Andrew A. Chien
8th Greater Chicago Area Systems Research Workshop.
Chicago, IL, May 2019

Accelerating Sparse Matrix Computation Using the UDP/Recoding Engine
Arjun Rawal, Yuanwei Fang, and Andrew A. Chien
CERES Research Summit.
Chicago, IL, April 2019

Accelerating Sparse Matrix Vector Product with the Recoding Engine
Arjun Rawal, Yuanwei Fang, and Andrew A. Chien
CERES Research Summit
Chicago, IL, September 2018

Honors and Awards

Technical Committee on Parallel Processing Award Recipient 2019

University of Chicago Dean's List 2017 - 2020

Dean's Fund for Undergraduate Research Scholarship 2019

Community and Professional Service

Volunteer Speaker 2019
Hour of Code Initiative, Argonne National Lab

- Presented to high school students about studying computer science in industrial and research settings

Relevant Coursework

Computer Science: Parallel Computing · Computer Architecture · Machine Learning · Security · Operating Systems · Database Systems · Networks · Distributed Systems · Cryptography · Algorithms · Programming Language Theory · Complexity Theory · Formal Languages

Mathematics: Abstract Linear Algebra · Basic Algebra · Real Analysis · Statistical Models and Methods · Discrete Mathematics