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Research

I am interested in the theories and designs of big data systems that are intelligent and safe. My current study focuses on efficient encrypted SQL for provable security. In the past, I have also dabbled in constraint learning for puzzle-solving AI, false-discovery control in data science, approximate data structures for visualization, database design on hybrid memory, consistency control for stochastic machine learning algorithms, and searchable encryption on mobile text messaging.

Education

Ph.D. Candidate in Computer Science, Brown University, expected 2019.
Advisor: Prof. Stan Zdonik, Prof. Seny Kamara

M.S. in Computer Science, Brown University, 2016.
Advisor: Prof. Stan Zdonik

B.S. in Computer Science, University of Wisconsin at Madison, 2012.
Advisor: Prof. Jignesh Patel

Experiences

Brown University, RI

Research Assistant, 2014 – present.

Teaching Assistant, 2015.

Microsoft AI & Research, WA, Research Intern, 2017.

Intel Labs, CA, Research Intern, 2015.

Hadapt (Acquired by Teradata), MA, Software Engineer, 2013 – 2014.

Kosmix (Acquired by @WalmartLabs), CA, Software Engineer Intern, 2012.

Great Lakes Bioenergy Research Center, WI, Software Engineer Intern, 2010 – 2012.

Honors

Eta Kappa Nu

Upsilon Pi Epsilon

Golden Key International Honour Society

Articles

Investigating the Effect of the Multiple Comparisons Problem in Visual Analysis.
E. Zgraggen, Z. Zhao, R. Zeleznik, and T. Kraska,
CHI, April 2018.

Signal Search.
J. Engelman, S. Kamara, T. Moataz and S. Zhao,
Software release: `http://github.com/encryptedsystems/Searchable-Signal-Android`.
Press release: `http://esl.cs.brown.edu/blog/signal`, April 2017.

Controlling False Discoveries During Interactive Data Exploration.
Z. Zhao, L. De Stefani, E. Zgraggen, C. Binnig, E. Upfal and T. Kraska,
SIGMOD, May 2017.

Safe Visual Data Exploration.
Z. Zhao, E. Zgraggen, L. De Stefani, C. Binnig, E. Upfal and T. Kraska,
SIGMOD Demo, May 2017.

Bridging the Gap between HPC and Big Data frameworks.
M. Anderson, S. Smith, N. Sundaram, M. Capota, Z. Zhao, S. Dulloor, N. Satish and T. Willke,
VLDB, 2017.

Towards Sustainable Insights.
C. Binnig, L. De Stefani, T. Kraska, E. Upfal, E. Zgraggen and Z. Zhao,
CIDR, January 2017.

Towards a Benchmark for Interactive Data Exploration.
P. Eichmann, E. Zgraggen, Z. Zhao, C. Binnig, T. Kraska.
IEEE Data Engineering Bulletin, 2016.

Larger-than-memory Data Management on Modern Storage Hardware for In-memory OLTP Database Systems.
L. Ma, J. Arulraj, S. Zhao, A. Pavlo, S. Dulloor, M. Giardino, J. Parkhurst, J. Gardner, K. Doshi and S. Zdonik,
SIGMOD DaMoN, June 2016.

VisTrees: Fast Indexes for Interactive Data Exploration.
M. El-Hindi, Z. Zhao, C. Binnig and T. Kraska,
SIGMOD HILDA, June 2016.

Data Tiering in Heterogeneous Memory Systems.
S. Dulloor, A. Roy, Z. Zhao, N. Sundaram, N. Satish, R. Sankaran, J. Jackson and K. Schwan,
EuroSys, April 2016.

Selected Coursework

Abstract Algebra, Prof. Rich Schwartz

Calculus, Prof. Donald Passman, Gheorghe Craciun

Randomized Algorithms for Counting, Integration and Optimzation, Prof. Paul G. Dupuis

Cryptography, Prof. Seny Kamara, Joseph Silverman

Probability, Prof. Erik Sudderth, Samuel S. Watson

Computational Linguistics, Prof. Eugene Charniak

Computer Architecture, Prof. Sherief Reda, Mark D. Hill

Distributed Computing through Combinatorial Topology, Prof. Maurice Herlihy

Database Management, Prof. Stan Zdonik, Jignesh Patel, Christopher Ré

Microprocessor Synchronization, Prof. Maurice Herlihy

Algorithms and Data Structures, Prof. Eric Vigoda, Ben Liblit

Operating Systems, Prof. Michael Swift

Computer Networks, Prof. Aditya Akella

Physics, Prof. Peter Timbie, Daniel Chung, Ellen Zweibel