

# Zheguang Zhao

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## Education

Ph.D. Candidate in Computer Science, Brown University, Rhode Island, expected 2020.

Advisor: Prof. Seny Kamara and Stan Zdonik.

Thesis: *Relational Database Encryption*

M.S. in Computer Science, Brown University, Rhode Island, 2016.

Advisor: Prof. Stan Zdonik.

Thesis: *Approximate Data Structures for Visualization*

B.S. in Computer Science, University of Wisconsin at Madison, Wisconsin, 2012.

Advisor: Prof. Jignesh Patel

## Certification

Deep Learning Specialization, Coursera / *deeplearning.ai*

Neural Networks and Deep Learning

Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization

Structuring Machine Learning Projects

Convolutional Neural Networks

Sequence Models

## Technology

ML: Tensorflow, Keras; JuMP

Systems: Apache Spark, Hadoop; PostgreSQL

PL: Scala; Java, C#; C; Python, Julia

Infra: Amazon EC2; Jenkins; Git; Jira; Docker

## Honors

Eta Kappa Nu

Upsilon Pi Epsilon

Golden Key International Honour Society

## Experiences

Los Alamos National Laboratory, 2019 – present.

Machine learning model reconstruction of mixed dynamics in cyber-physical systems, with application to network verification and security.

Aroki Systems, 2018 – present.

Provably-secure end-to-end database encryption for PostgreSQL and Apache Spark.

Microsoft AI & Research, 2017.

Constraint learning for puzzle-solving AI.

Intel Labs, 2015.

Efficiency of machine learning algorithms in Apache Spark.

In-memory transactional processing using non-volatile memory.

Hadapt (Acquired by Teradata), 2013.

Enterprise SQL-on-Hadoop system including query execution, storage engine, high availability and analytics.

Kosmix (Acquired by @WalmartLabs), 2012.

In-memory distributed queue system for the in-house stream processing.

Great Lakes Bioenergy Research Center, 2010.

Scientific database for biological enzyme research.

## Publications

*Dynamic Query Refinement for Interactive Data Exploration*  
EDBT/ICDT Joint Conference, March 2020.

*Investigating the Effect of the Multiple Comparisons Problem in Visual Analysis.*  
CHI Conference, April 2018.

*Signal Search.*  
Press release: <http://esl.cs.brown.edu/blog/signal>, April 2017.

*Controlling False Discoveries During Interactive Data Exploration.*  
SIGMOD Conference, May 2017.

*Safe Visual Data Exploration.*  
SIGMOD Conference, Demo, May 2017.

*Bridging the Gap between HPC and Big Data frameworks.*  
VLDB Journal, 2017.

*Towards Sustainable Insights.*  
CIDR Conference, January 2017.

*Towards a Benchmark for Interactive Data Exploration.*  
IEEE Data Engineering Bulletin, 2016.

*Larger-than-memory Data Management on Modern Storage Hardware for In-memory OLTP Database Systems.*  
SIGMOD DaMoN Workshop, June 2016.

*VisTrees: Fast Indexes for Interactive Data Exploration.*  
SIGMOD HILDA Workshop, June 2016.

*Data Tiering in Heterogeneous Memory Systems.*  
EuroSys Conference, April 2016.

## Preprints

*An Optimal Relational Database Encryption Scheme*  
Cryptology ePrint Archive: Report 2020/274.

*Behavior of Large Random Graph.*  
Randomized Algorithms for Counting, Integration and Optimization, Brown University, April 2017.

## Software<sup>1</sup>

ML framework for Cyber-physical Systems [[link](#)]

Encrypted Spark [[link](#)]

Encrypted Searchable Signal [[link](#)]

Macau: statistical hypothesis testing based on resampling [[link](#)]

Machine learning algorithms in Spark [[link](#)]

Consistency control for machine learning algorithms [[link](#)]

R-tree in Rust [[link](#)]

Spark performance analysis tool [[link](#)]

VoltDB on non-volatile memory [[link](#)]

## Reference

Prof. Stanley Zdonik, Professor at Brown University

Prof. Seny Kamara, Professor at Brown University

Dr. Emanuel Zraggen, Postdoctoral associate at MIT

Dr. Andrey Lokhov, Los Alamos National Laboratory

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<sup>1</sup> All hosted on Github: <https://github.com/zheguang>