

University of Arizona
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Research Interests

- Interactive Visualization, Big Data Analysis, Machine Learning

Education

University of Arizona

Aug. 2016 – Present

- Ph.D. student in Computer Science
- Advisor: Dr. Carlos Eduardo Schedigger
- Research/Teaching Assistant

University of Illinois at Springfield

Sep. 2014 – Dec. 2015

- Master Degree in Computer Science
- Advisor: Dr. Ted Mims
- Graduate with Honors

Huazhong University of Science and Technology

Sep. 2009 – Jun. 2013

- Bachelor of Engineering in Computer Science and Technology
- Advisor: Dr. Ling Yuan
- Graduation Thesis: “The Shortest Path Algorithm on a Road Network”

Research Experience

University of Arizona

Dec. 2014 – Present

The Humans, Data, and Computers lab

- **STFT-LDA**: STFT-LDA is a novel technique to extract periodic and non-periodic features from time-series ensembles that combines short-time Fourier Transforms with topic modeling. Built a coordinated multiple-view prototype system based on STFT-LDA. Conducted a quantitative user study which shows that this technique can provide a better infrastructure for visual analysis of this specific type of time-series data.
- **Visualizing neuron activations of neural networks**: This project is trying to understand the neuron activations of deep neural networks in the training process. Built a comprehensive system which allows drilling down to confused inputs, pin-pointing the neuron when encountering errors and comparing different neural networks internally and externally

University of Arizona

May. 2017 – Aug. 2017

National Optical Astronomy Observatory and Computer Science Department

- **ANTARES**: The ArizonaNOAO Temporal Analysis and Response to Events System (ANTARES) is a software infrastructure necessary to process and filter alerts produced by Large Synoptic Survey Telescope. Built several important function modules to improve the scalability and robustness of the whole system. Optimized the dashboard to give detailed information of the system running results

University of Illinois at Springfield

Dec. 2014 – Jun. 2015

Dr. Elham S. Khorasani's Group

- **Scalable fuzzy relational operations in MapReduce**: A novel MapReduce algorithm to scale-up the fuzzy relational operations to large-scale crisp datasets. Designed the load-balancing component for the fuzzy join. Implemented the program locally and on EMR. Wrote the Experiment and Summary sections, helped write the fuzzy Join algorithm.
- **Sequential course recommendation system**: This project utilizes a Markov chain collaborative filtering model to recommend courses to students at each semester based on the sequence of courses they have taken in the previous semesters. Designed the new collaborative filtering algorithm involving the parameter – time stamps, implemented the recommendation system using Mahout.

Publications

1. Mingwei Li, Zhenge Zhao, and Carlos Scheidegger. Visualizing neuron activations of neural networks with the grand tour. *Workshop on Visualization for AI Explainability*.
2. Zhenge Zhao, Danilo Motta, Matthew Berger, Joshua A. Levine, Ismail Bahadir, Robert Fleischman, Afonso Paiva, and Carlos Scheidegger. Stft-lda: Visual analysis of building seismic responses. *Submitted to IEEE VIS 2018*.
3. Zhenge Zhao, Youhao Wei, Danilo Motta, Matthew Berger, Joshua A. Levine, and Carlos Scheidegger. Visualizing earthquake simulation data. *Accepted as a poster on IEEE VIS 2017*.
4. Gautham Narayan, Tayeb Zaidi, Monika D. Soraisam, Zhe Wang, Michelle Lochner, Thomas Matheson, Abhijit Saha, Shuo Yang, Zhenge Zhao, John Kececiloglu, Carlos Scheidegger, Richard T. Snodgrass, Tim Axelrod, Tim Jenness, Robert S. Maier, Stephen T. Ridgway, Robert L. Seaman, Eric Michael Evans, Navdeep Singh, Clark Taylor, Jackson Toeniskoetter, Eric Welch, Songzhe Zhu, and The ANTARES Collaboration. Machine-learning-based brokers for real-time classification of the lsst alert stream. *The Astrophysical Journal Supplement Series*, 236(1):9, 2018.
5. E. S. Khorasani, Z. Zhenge, and J. Champaign. A markov chain collaborative filtering model for course enrollment recommendations. In *2016 IEEE International Conference on Big Data (Big Data)*, pages 3484–3490, Dec 2016.
6. Elham S. Khorasani, Matthew Cremeens, and Zhenge Zhao. Implementation of scalable fuzzy relational operations in mapreduce. *Soft Computing*, 22(9):3061–3075, May 2018.

Working Experience

Hanson Professional Services Inc.

Jun. 2015 – Aug. 016

Computer services department

- Regenerated the whole File Index Web pages in Visual Studio 2010 using ASP.NET Web Form
- Wrote the C# codes to achieve controls in background like looking up the database, role-based login
- Redesigned the stored procedure and triggers in MS Server for optimization and security problem

Professional Skills

- **Programming:** Python, C++, JS, C#
- **Web Design:** ASP.NET, HTML, CSS3
- **Game Development:** Unity
- **Game Visualization:** D3, Openframework, ParaView
- **Data Analytics:** Hadoop, Hive, Pig, Mahout, Weka, R, Spark, SQL

Extracurricular Activities & Leadership

University of Arizona

Jan. 2018

- Winner of two categories, Data Visualization and Best Use of AWS in Hack Arizona (about 1000 participants)

University of Illinois at Springfield

Aug. 2014 – Dec. 2015

- Co-founder of UIS Tech Brainstorming Club
- Vice President of 404 Society
- Team Ranking 13th (129 teams) in the National Cyber League Championship Game
- Individual ranking 71st (2153 participants) in the National Cyber League Regular Game

Huazhong University of Science and Technology

Nov. 2011 – Nov. 2012

- President of Oral Salon Association (Awarded as Top Ten Student Associations)
- Individual Awarded as Excellent Association Cadre during 2011-2012 academic year