Hong Wang

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OBJECTIVE

I am a graduate student who is looking for a software engineering position. I have experience in full-stack web development, database architecture and management, data visualization and data mining.

EDUCATION

Computer Science, (PhD Candidate) GPA: 3.75 05/2019
Arizona State University
Adviser: Ross Maciejewski

Computer Science, B.S. GPA: 3.66 05/2013
University of Nevada, Las Vegas

WORK EXPERIENCE

Uber
Software Engineer Intern 05/2018 – 08/2018

- Worked as a visualization developer and full-stack web developer.
- Collaborated with multiple senior data scientists.
- Project: A Visual Analytics System for Causality Analysis
  - Designed and developed a visual analytics system to help incorporate human knowledge in causality analysis.
  - Worked as the sole developer for this project and implemented both the backed server and the frontend views.
  - The system performed Bayesian network learning and hierarchical clustering in the Python backend and allowed interactions with the models through the visualizations in the frontend.
- Project: An Embedding Visualization Tool
  - Implemented an embedding visualization system using the deck.gl javascript library.
- Contributed to the deck.gl javascript library by implementing two experimental InfoVis layers.

  Technology Used: *Javascript, ReactJS, Redux, Deck.gl, Python, Flask*

Pacific Northwest National Laboratory
PhD Research Intern 05/2017 – 04/2018

- Worked as a visualization researcher and full-stack web developer.
- Collaborated with visualization research scientists and climate scientists.
- Project: A Visual Analytics System for Climate Model Comparison
  - Designed and developed a web-based visual analytics system to help climate scientists compare the model performances between a large number of models.
  - Implemented a scalable visual analytic framework integrating various visualization techniques, such as parallel coordinate plots, histogram, etc.
  - Submitted a research paper about this work to the SIGCHI conference.

  Technology Used: *Javascript, ReactJS, Redux, D3.js, NodeJS, Express, MongoDB*

Arizona State University
Graduate Research Assistant 07/2014 – Current

SKILL HIGHLIGHTS

Programming Languages: Javascript, Java, C/C++, Python, Matlab, HTML, CSS
Libraries/Frameworks: D3.js, jquery, React, Redux, NodeJS, Tomcat, OpenGL
Databases: MongoDB, MySQL, PostgreSQL
Revision Controller: Git
Operating System: Linux

RESEARCH PROJECTS

Project demos can be found at http://www.public.asu.edu/~hxwang/

A Visual Analytics Framework for Spatial Temporal Trade Network Analysis 2017

- Lead a team of three graduate students to build a visual analytics system utilizing web technologies.
- Calculated various network properties from a global trade network data, and applied Pearson correlation to identify the network properties that highly correlated with the political stability measures.

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- Detect anomalous changes over time in each country's network property and political stability measures.
- Used multiple coordinated views to allow the users to explore the dataset interactively.

Technology Used: *Javascript, Java, HTML, D3.js, Tomcat, MySQL*

A Visual Analytics Framework for Identifying Topic Drivers in Media Events 2016

- Built a web-based visual analytics system using Javascript, D3.js, Java, Tomcat and MongoDB.
- Developed a semantic keyword search model to search and connect the textual data from two datasets.
- Implemented the hierarchical clustering algorithm on Javascript to group keywords by their semantic meanings, and implemented a force directed layout to display the clusterings and allowed the drag-and-drop interaction on the layout to refine the clusterings.
- Implemented the Granger Causality method to detect the cause-effect relationships and visualized the results on a timeline with optional annotations.

Technology Used: *Javascript, Java, HTML, D3.js, Tomcat, MongoDB*

Visualizing Attitude toward Dairy Products in Social Media 2015

- Implemented a word tree layout to allow users to detect frequently mentioned phrases in twitter.
- Allowed users to choose phrases on the word tree layout, and display their mention frequency for each state on a choropleth map.
- Extracted the sentiment from each tweet and plotted the average sentiment for each state on a choropleth map.

Technology Used: *Javascript, Java, HTML, D3.js, Tomcat, PostgresSQL*

Visualizing Topical Trends in Social Media 2014

- Used LDA topic model to extract topics from tweets and plot the topic distribution over time.
- Extracted named entities from the tweets and plotted the frequency of the named entities on a timeline.
- Calculated the frequencies of co-occurrences for all pairs of the named entities and plotted their relationships using a force-directed layout.

Technology Used: *Javascript, Java, HTML, D3.js, Tomcat, MongoDB*

SIDE PROJECTS

Comparing Universities by Graduating Rate and Pell Grant Rate

- Compared different universities by plotting the percent of students who graduate in four years against the percent of students who receive Pell Grant.

Technology Used: *HTML, Javascript, D3.js, NodeJS*

A Simple Javascript Library for Clustering

- Provided a library that performs hierarchical clustering, kmean clustering, and Girvan Newman network clustering.
- Can be found at https://github.com/kenns29/clustering/

PUBLICATIONS

- **H. Wang**, Y. Lu, S. T. Shutters, M. Steptoe, F. Wang, S. Landis, R. Maciejewski, "A Visual Analytics Framework for Spatial Temporal Trade Network Analysis", *IEEE Transactions on Visualization and Computer Graphics.* (To Appear)
- **H. Wang**, A. Dasgupta, S. Burrows, N. O'brien, "MyriadCues: Supporting Expert Judgment of Simulation Model Performance Using Comparative Visual Cues", *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems.* (In Progress)
- Y. Lu, **H. Wang**, S. Landis, R. Maciejewski, "A Visual Analytics Framework for Identifying Topic Drivers in Media Events", *IEEE Transactions on Visualization and Computer Graphics,* vol. PP, no. 99, pp. 1-1.
- Y. Lu, M. Steptoe, S. Burke, **H. Wang**, J. Tsai, H. Davulcu, D. Montgomery, S. R. Corman, R. Maciejewski, "Exploring Evolving Media Discourse Through Event Cueing" *IEEE Transactions on Visualization and Computer Graphics*, 22(1):220-229, 2016.
- C. M. Whisner, **H. Wang**, S. Felix, R. Maciejewski, "Mining the Twitter-Sphere for Consumer Attitudes Towards Dairy," *The FASEB Journal* vol. 30 no. 1. (Abstract)