Hayeong Song

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Summary

I am Computer Science Ph.D. student at Georgia Tech, working with Dr. John Stasko. My research goal is to enhance people's ability to analyze data and train sustainable ML models. To achieve this goal, I build and design interactive visualization systems by leveraging ML models, visualizations, and mixed-initiative techniques.

I have experience in front/back end development and data visualization. I use a mixed-methods approach to inform design direction and develop products. I have been fortunate to work with amazing researchers, engineers and scientists at Microsoft.

Education

PhD Computer Science, Georgia Institute of Technology, *Aug 2018 - Expected to graduate May 2023*
Advised by Dr. John Stasko

M.S. Computer Science, University of Colorado Boulder, *2016 - 2018*
Advised by Dr. Danielle Albers Szafir

B.S. Computer Science, Handong Global University, *2012-2016*

Publications

Hayeong Song & Danielle Albers Szafir. "Where's My Data? Evaluating Visualizations with Missing Data." IEEE Transactions on Visualizations and Computer Graphics, 2019. In Proceedings of IEEE VIS 2018.

Hayeong Song, Bahador Saket, & John Stasko "Evaluating the Effects of Visualizing Missing Values on Data Exploration." IEEE Transactions on Visualizations and Computer Graphics, 2020.

Hayeong Song, Yu Fu, Bahador Saket, & John Stasko "Understanding the Effects of Visualizing Missing Values on Data Exploration" IEEE Transactions on Visualizations and Computer Graphics, 2021.

Hayeong Song "Measuring the Role of Visualization on Missing Values in Time Series Data" University of Colorado Boulder, Computer Science Master's Thesis, 2018.

Experience

Research Intern at Microsoft Research *May 2021 - Aug 2021*
Machine Teaching for Video AI, Mentors: Peter Bodik & Gonzalo Ramos

- Worked on improving Video AI tool (Pixie) by leveraging ML models and visualization to help users to train computer vision models easily.
- Designed and conducted experiment to text usability of the Video AI tool.

Research Assistant, Georgia Institute of Technology *Aug 2018 - Present*
Information Interfaces Research Group, Advisor: Professor John Stasko

- Implemented a multimodal drawing tool that supports speech and touch interactions.
- Conducted a user study to test effective speech activation techniques for a multimodal user interface.
- Built a visualization tool that leverages different ML interpolation methods and visualization techniques for users who have to analyze and make decisions with an incomplete dataset.

Research Assistant, University of Colorado, Boulder *Feb 2017- June 2018*
VisuaLab, Advisor: Professor Danielle Albers Szafir

- Analyzed Tweets using sentiment analysis, topic modeling, and time-series analysis with machine learning and natural language processing models.
- Built visualization dashboard for social media for data analysis results.
- Conducted crowdsourced studies testing impact of visualization and imputation on missing data.

Internship at Dabarun Software *Jan 2015 - Feb 2015*

- Implemented the chatting client and server using Mongo DB, Node.js and MySQL.
- Implemented client part of the Android and designed and implemented a game UI application.

Honors and Awards

College of Computing Travel scholarship for Grace Hopper Conference *USA, 2020*
College of Computing Travel Scholarship for Richard Tapia Conference *USA, 2019*
College of Computing Travel scholarship for Grace Hopper Conference *USA, 2019*
CRA-W Grad Cohort for Women workshop scholarship *USA, 2019*
The 1st Prize in C-Programming Camp, Handong Global University *2013*
The 2nd Prize in Samsung Software Friendship *2014*
Entrance Scholarship (awarded to 15% of all freshmen), Handong Global University *2012*

Talks

Understanding the Effects of Visualizing Missing Values on Data Exploration
Hayeong Song, Yu Fu, Bahador Saket, John Stasko
October 2021, Oral Presentation IEEE VIS

Evaluating the Effects of Visualizing Missing Values on Data Exploration
Hayeong Song, Bahador Saket, John Stasko
October 2020, Poster Presentation IEEE VIS

Where's My Data? Evaluating Visualizations with Missing Data.
Hayeong Song & Danielle Albers Szafir
October 2018, Oral Presentation IEEE VIS

Teaching

Teaching Assistant CS 4460 Information Visualization *Fall 2020*
Teaching Assistant CS 7450 Human-Computer Interact *Summer 2020*
Teaching Assistant CS 7450 Information Visualization *Fall 2018*
Teaching Assistant ECE10002-01 C-Programming *Fall 2015*

Mentoring

Shenyu Xu, Ph.D. CS, Mixed-methods analysis & usability testing *2021 Fall, Georgia Tech*
Ting Yu, M.S HCI, Qualitative and Quantitative Analysis *2021 Spring, Georgia Tech*
Yu Fu, Ph.D. CS, Qualitative coding & interrater reliability *2021 Summer, Georgia Tech*

Professional Service

Reviewer

TVCG 2018

IV 2020

Programming Skills

Programming: Python, C/C++, Java, MATLAB, HTML/CSS, JavaScript, React, PHP, AJAX, R
Machine Learning: Pandas, Scikit-learn, Plotly, Numpy, Scipy, Matplotlib, NLTK, Gensim, Tensorflow, PyTorch
Data Visualization: D3.js, Three.js, Matplotlib, ggplot, Tableau
Database & Toolkits: Latex, JMP, Android, JSON, MySQL, MongoDB, AWS, JMP

Design & Research

Quantitative Research, Qualitative Research, Statistical Analysis, Data Visualization, Excel, Usability Testing, Survey, Benchmark Testing, Participant Recruiting, Interviews, Personas, Task Analysis, Affinity diagram, Observational study, Hypothesis testing, A/B testing, Log Analysis, Wireframing, Storyboards, User journey, Wizard-of-Oz

Coursework

Machine Learning
Natural Language Processing
Probabilistic Models
Introduction to Graduate Algorithms
Knowledge Based AI
Information Visualization
Human Computer Interact
User Interface Design & Evaluation
Network Analysis and Modeling
Network Systems
Foundation of Software Engineering
Educational Tech Foundations
Statistical Methods*
Math Foundation for Machine Learning*
(*)denotes in progress