Songwen Hu

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Research Interests: Data Visualization, Human-centered AI, and adaptive interaction design. Passionate about bridging large-scale database with real-time multimodal systems for personalized user experiences.

EDUCATION

Georgia Institute of Technology Atlanta, GA, USA
School of Interactive Computing (IC)
Ph.D. in Computer Science *Aug 2023 – Jun 2028 (Expected)*
Core Courses: *Data Vis Principles, Inform Visualization*, *Data & Visual Analytic, Human-Computer Interact, Computer Vision, Psychological Statistics.*

Shanghai Jiao Tong University Shanghai, CN
University of Michigan - Shanghai Jiao Tong University Joint Institute (UM-SJTU JI)
B.Eng. in Electrical and Computer Engineering *Sept 2019 - Aug 2023*
Core Courses: *Calculus, Linear Algebra, Probabilistic Methods in Engineering, Discrete Mathematics, Programming & Elementary Data Structures, Data Structures & Algorithms, Intro to Data Science, Computer Organization, Signals & Systems, Circuits, Logic Design, Software Engineering, Intro to Artificial Intelligence, Machine Learning, etc.*

PUBLICATION

VisChatter: Enhance Synchronous Collaboration on Visualization Dashboard through Visual Annotations
Songwen Hu, Tong Yu, Ryan A. Rossi, Sungchul Kim, Cindy Xiong Bearfield
To be presented at *the Annual Meeting of the Cognitive Science Society 2025* (CogSci 25')

Interactive Visualization Recommendation with Hier-SUCB
Songwen Hu, Ryan A. Rossi, Tong Yu, Junda Wu, Handong Zhao, Sungchul Kim, Shuai Li
Accepted by *International World Wide Web Conference 2025* (WWW 25') [arXiv]

Perceptual Benefits of Animation are Task-Dependent: Effects of Staging and Tracing in Dynamic Displays
Songwen Hu, Ouxun Jiang, Jeffrey Riedmiller, Cindy Xiong Bearfield
Accepted by *IEEE Visualization Conference 2024* (VIS 24') [arXiv]

Hierarchical Conversational Preference Elicitation with Bandit Feedback
Jinhang Zuo, **Songwen Hu**, Shuai Li, Tong Yu, Handong Zhao, Carlee Joe-Wong
Accepted by *Conference on Information and Knowledge Management 2022* (CIKM 22') [arXiv]

Working Experience

Bosch China Shanghai, CN
Embedded Software Engineer Intern *Jan 2022 - Jun 2022*
Project: Deep Learning-based Gesture Recognition Algorithm Development

- Developed gesture recognition algorithms for Human-Vehicle Interaction using DNN.
- Applied the attention network to the neural network for dynamic gesture classification.
- Achieved 90% accuracy for 16 static gestures and 9 dynamic gestures on webcam with 720p@30fps.

PROJECT EXPERIENCE

VisChatter – Visual Annotations for Collaborative Analytics
Advisor: Cindy Xiong Bearfield (Georgia Tech), Tong Yu (Adobe)

- Designed and implemented an interactive visualization dashboard with real-time annotation to enable synchronous collaborative analytics.
- Integrated speech recognition API, LLM-based keyword extraction, and custom annotation APIs for seamless multimodal input.
- Conducted controlled A/B testing against baseline tools, measuring user engagement and task efficiency improvements, and collected qualitative feedback via in-person studies.

Interactive Visualization Recommendation with Hier-SUCB
Advisor: Shuai Li (STJU), Ryan A. Rossi (Adobe)

- Developed a hierarchical bandit-based recommendation model to personalize visualization suggestions from user interaction histories.
- Incorporated a bias term to model individual preferences and optimize recommendation relevance.
- Performed A/B testing on the Plot.ly dataset, validating performance through an online user study.

Hierarchical Conversational Preference Elicitation with Bandit Feedback
Advisor: Shuai Li (SJTU), Tong Yu (Adobe)

- Proposed and implemented a multi-armed bandit algorithm for preference elicitation in hierarchical item spaces.
- Ran large-scale simulations demonstrating performance gains over baseline algorithms.
- Conducted online user study on the Yelp dataset to validate real-world applicability.

SKILL SET

Programming & ML Frameworks: Python, MATLAB, C++, JavaScript, PyTorch, TensorFlow, R

Human-Computer Interaction: Interactive visualization (D3.js, Vega-lite, Tableau), Haptic feedback, VR-based storytelling, UX design

Experimental Design: User study design (jsPsych), cognitive task development

Other Tools: Qt Designer, Unity (basic), SolidWorks, Origin Lab