Shiyao Li

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Education

Emory University — Atlanta, GA
Ph.D. in Computer Science and Informatics, Advised by Emily Wall — *Aug. 2021 – Expected Dec. 2026*

Vanderbilt University — Nashville, TN
Master of Science in Data Science, Advised by Maithilee Kunda — *Aug. 2019 – May. 2021*

Northwest A&F University — Yangling, China
Bachelor of Engineering in Computer Science — *Sept. 2014 – Jun. 2018*

Experience

Data Science Intern — Sept. 2025 – Dec. 2025
TikTok, Privacy and Data Protection Office, San Jose, CA

- Built and enhanced an Inference-Time Augmentation (ITA) AI agent knowledge base for TikTok Privacy and Transparency features to automate root cause analysis (RCA) of privacy-related bugs
- Enabled code-level fix recommendations for TikTok engineers, achieving 100% RCA accuracy and 85% code-fix adoption rate in preliminary evaluations
- Led the technical writing and publication of the ITA agent on ByteTech (ByteDance's internal engineering knowledge platform), documenting system architecture and deployment best practices; the work was selected as one of ByteTech's Annual Top 10 AI Application Case Studies.
- Designed a three-layer causal AI framework to detect and quantify privacy-risk signals in large-scale TikTok A/B experiments, integrating LLM-based vulnerable code detection with causal modeling to estimate relationships between privacy risk metrics, feature usage metrics, and business outcomes

Data Visualization Intern: Interactive Visualization Prototype — Aug. 2023 – Dec. 2023
Atlanta Interdisciplinary Artificial Intelligence Network, Atlanta, GA

Data by Design: a digital book chronicling the history of data visualization
Advisor: Lauren Klein | Technical Stack: D3.js, P5.js, JavaScript, Figma

- Prototyped and developed an interactive data visualization of slaving voyages that took place between 1565 and 1858 using d3.js and p5.js. *Related Chapter*: Every Datapoint a Person
- Prototyped and developed an interactive data visualization of the project team's labor contribution data using d3.js for the chapter about the making of the site. *Related Chapter*: From Idea to Insight

Research Assistant: Quantitative/Qualitative User Research — Aug. 2021 – Present
Emory University, Atlanta, GA

Exploring the Impact of Textual Description on Confirmation Bias in Visual Reasoning
Advisor: Emily Wall | Technical Stack: JavaScript, Python, R, Qualtrics, Prolific

- Designed and conducted quantitative studies with 1080 participants to measure how textual descriptions alongside visualizations affect belief updating
- Conducted analyses with mixed-effects linear models and ANOVA, confirming that textual descriptions with visual annotation within data visualizations can lead people to align their beliefs more closely with the presented evidence
- Summarized the findings as the first author, with the work accepted as a full paper at ACM CHI, a top-tier Human-Computer Interaction conference (25.1% acceptance rate)

Enhancing Elicitation Expressiveness Through Visual Elicitation Techniques
Advisor: Emily Wall | Technical Stack: D3.js, JavaScript, Qualtrics, Prolific

- Designed and conducted comprehensive qualitative studies with 41 participants to understand how people represent mental constructs visually through drawing
- Identified key components and combination patterns of mental constructs used by participants to express attitudes and beliefs
- Prototyped and developed five interactive visual elicitation tools incorporating identified mental constructs to enhance expressiveness and informed the design of future elicitation techniques
- Summarized the findings as the first author, with the work accepted as a full paper at ACM CHI, a top-tier Human-Computer Interaction conference (25.3% acceptance rate)

Talks

- Understanding and Mitigating Confirmation Bias in Visual Data Interpretation. *Doctoral Colloquium at IEEE VIS 2024*
- Margins of Violence: Navigating Resistance in Data Visualization. *2024 AIGA Design Conference*
- Listening to (Digital) Images: A Black Sound Studies Approach to Alt-text. *2024 Annual Conference of the Alliance of Digital Humanities Organizations*

Peer-reviewed Digital Project (Book Length)

- Lauren Klein, Tanvi Sharma, Jay Varner, **Shiyao Li**, Margy Adams, Nicholas Yang, Dan Jutan, Jianing Fu, Anna Mola, Zhou Fang, Yang Li, and Silas Munro. Data by Design: An Interactive History of Data Visualization, 1789-1900. 2024 public beta. Final version forthcoming in print and online from The MIT Press in Fall 2026

Publication (* - equal contribution)

- **Shiyao Li**, Roshini Deva, Arpit Narechania, Alireza Karduni, Cindy Xiong Bearfield, Emily Wall. Does a Picture Paint a Thousand Words? Using Visual and Textual Channels to Understand Attitudes and Beliefs. Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI), 2026
- **Shiyao Li**, Thomas Davidson, Cindy Xiong Beaerfield, Emily Wall. Confirmation Bias: The Double-Edged Sword of Data Facts in Visual Data Communication. Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI), 2025
- **Shiyao Li**, Margy Adams, Tanvi Sharma, Jay Varner, Lauren Klein. What Data Does and Does Not Represent: Visualizing the Archive of Slavery. *IEEE Computer Graphics and Applications*, 2025
- Xiaoman Zi*, **Shiyao Li***, Roxanne Rashedi, Marian Rushdy, Ben Lane, Shitanshu Mishra, Gautam Biswas et al. Adapting Educational Technologies across Learner Populations: A Usability Study with Adolescents on the Autism Spectrum. Proceedings of the 42nd Annual Meeting of the Cognitive Science Society
- Zhanwen Chen, **Shiyao Li**, Roxanne Rashedi, Xiaoman Zi, Morgan Elrod-Erickson, Bryan Hollis, Angela Maliakal, Xinyu Shen, Simeng Zhao, and Maithilee Kunda. Characterizing datasets for social visual question answering, and the new tinysocial dataset. In 2020 Joint IEEE 10th International Conference on Development and Learning and Epigenetic Robotics (ICDL-EpiRob)

Poster Presentation

- **Shiyao Li**, Meeshu Agnihotri, Cindy Xiong Bearfield, Emily Wall. When Visualization and Verbalization Collide: Effect of Textual Summaries on Visual Interpretations of Data. Psychonomic 63rd Annual Meeting

Works Under Review

- **Shiyao Li**, Arpit Narechania, Roshini Deva, Alireza Karduni, Cindy Xiong Bearfield, Emily Wall. Does a Picture Paint a Thousand Words? Using Visual and Verbal Channels to Elicit Attitudes and Beliefs

Service and Volunteering

- Reviewer | *IEEE VIS (×2)* 2025
- Reviewer | *The Eurographics Conference on Visualization (×1)* 2026
- Reviewer | *Journal of Visualization and Interaction (×1)* 2024
- Reviewer | *ACM CHI Conference (×2)* 2024, 2026
- Volunteer | *IEEE VIS* 2022, 2023, 2024

Teaching

- Guest Speaker | *AMST 201W - Introduction to American Studies, Emory University* Spring 2024
- Guest Lecturer (x2) | *CS 584: Human Computer Interaction, Emory University* Spring 2023, Spring 2022
- Teaching Assistant | *CS 584: Human Computer Interaction, Emory University* Spring 2023, Spring 2022
- Teaching Assistant | *CS 584: Information Visualization, Emory University* Fall 2021
- Teaching Assistant | *DS 5640: Machine Learning 1, Vanderbilt University* Spring 2021
- Teaching Assistant | *DS 5620: Probability and Inference, Vanderbilt University* Fall 2020

Mentorship

- Joshua Bai | *BA in Psychology and Linguistic, Emory University Class of 2024* 2024
- Jordan Leslie | *BS in Computer Science, Emory University Class of 2024* 2023
- Zheyuan Zhang | *MS in Computer Science, Emory University Class of 2023* 2023

Skills

Visualization Prototype: D3.js, P5.js, Vega-Lite
Quantitative Research: Statistical Modeling, Quantitative User Experiment Design, Analysis of Variance
R Tools: tidyverse, dplyr, ggplot2
Languages: Python, R, JavaScript, HTML/CSS, Java, C/C++, SQL
AI & Machine Learning: Langchain, Langgraph, Transformer Model, CNNs, Pandas, Numpy, PySpark