

# Dongping Zhang

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## Research interests

My research lies at the intersection of Human-Computer Interaction and Artificial Intelligence, focusing on developing novel visualization techniques and interaction methods for AI/ML systems. I design interfaces, tools, and frameworks to effectively communicate uncertainty in AI-powered decision support systems, enabling users to make more informed, trustworthy, and data-driven decisions across various domains. Using an interdisciplinary and mixed-methods approach, I develop uncertainty quantification techniques, integrate statistical and AI/ML models for system analysis, and derive actionable insights through large-scale online experiments and user studies.

## Education

### Northwestern University

Evanston, IL

Ph.D., M.S. in Technology and Social Behavior

2018 - 2024

*Dual Ph.D. in Computer Science and Communication Studies*

Committee: Jessica Hullman (Chair), Jason Hartline, Matt Kay, Ágnes Horvát

Dissertation: *Strategies for Communicating Uncertainty in Predictive Systems for Enhanced Data-Driven Decision-Making*

### The University of Chicago

Chicago, IL

M.A. in Computational Social Science

2016 – 2018

Advisor: Luc Anselin

### University of California, Berkeley

Berkeley, CA

B.A. in Statistics, B.A. in Economics

2012 – 2016

## Peer-reviewed publications

**Zhang, Dongping**, Angelos Chatzimparmpas, Negar Kamali, and Jessica Hullman (2024). “Evaluating the Utility of Conformal Prediction Sets for AI-advised Image Labeling.” *Proc. 2024 CHI Conf. Hum. Factors Comput. Syst.*, Article 302. DOI: <https://doi.org/10.1145/3613904.3642446>

**Best Paper Honorable Mention (Top 5% of 4,028 paper submissions)**

**Zhang, Dongping**, Jason Hartline, and Jessica Hullman (2024). “Designing Shared Information Displays for Agents of Varying Strategic Sophistication.” *Proc. ACM Hum.-Comput. Interact.*, Volume 8, Issue CSCW1, Article 42, DOI: <https://doi.org/10.1145/3637319>

**Zhang, Dongping**, Eytan Adar, and Jessica Hullman (2021). “Visualizing Uncertainty in Probabilistic Graphs with Network Hypothetical Outcome Plots (NetHOPs).” *IEEE Trans. Vis. Comput. Graph.*, Volume 28, Issue 1, pp. 443-453. DOI: <https://doi.org/10.1109/TVCG.2021.3114679>

Open-sourced model

**Zhang, Dongping** and Uri Wilensky. “NetLogo Taxi Cabs Model”. *Center for Connected Learning and Computer-Based Modeling*, Northwestern University, Evanston, IL. <http://ccl.northwestern.edu/netlogo/models/TaxiCabs>

Industry  
research experience

**Research Scientist | AI + Data Visualization** 2024 - Present  
*National Renewable Energy Laboratory* Golden, CO  
 Mentor: Kristi Potter and Juliane Mueller  
 Project: Lead research at the intersection of AI and Data Visualization, developing novel visualization techniques to enhance AI-assisted decision-making in renewable energy applications. My work includes designing actionable uncertainty visualizations for large-scale surrogate models, enabling policy-makers to interpret and interact with uncertainty in ensemble simulation outputs more effectively. Additionally, I investigate methods to visualize distribution shifts caused by noise from differential privacy mechanisms, ensuring the interpretability, privacy, and robustness of AI-driven decision support workflows. I collaborate closely with DOE stakeholders and academic partners to secure competitive funding, while also mentoring junior researchers and shaping research directions within the Computational Science Center.

Academic  
research experience

**Graduate Research Assistant** 2019 – 2024  
*MU Collective Research Lab*, Northwestern University  
 PI: Jessica Hullman  
 Project: Developed and evaluated advanced uncertainty quantification techniques to communicate prediction uncertainty in machine learning and deep learning models. Engineered and implemented innovative design strategies for prediction interfaces, focusing on human-in-the-loop, data-driven decision-making. This approach not only facilitated informed user decisions for optimal system performance but also emphasized the importance of explainability and transparency in predictive modeling.

**Graduate Research Assistant** 2018 – 2019  
*Science of Networks in Communities*, Northwestern University  
 PI: Noshir Contractor  
 Project: Utilized digital trace data to construct large social networks through ML/AI models. This involved processing large-scale user interaction data to infer and analyze complex social dynamics of tie formation, which unveiled key patterns and dynamics in social interactions within work organizations.

## Academic Services

### **Program Committee / Reviewer**

IEEE Workshop on Uncertainty Visualization

IEEE VIS 2024

### **Program Committee / Reviewer**

TVCG Journal Paper Track

IEEE PacificVis 2025

### **Reviewer**

IEEE Transactions on Visualization and Computer Graphics

IEEE TVCG

## Teaching experience

### **Teaching assistant, Department of Computer Science (Northwestern)**

COMP\_SCI 333: Interactive Information Visualization

Fall 2023

### **Teaching assistant, School of Communication (Northwestern)**

COMM.ST 395: Rhetoric of Sports Marketing

Spring 2022

## Invited talks

### **Designing Information Displays for Multi-agent Strategic Settings**

ACM CSCW 2024

### **Uncertainty Quantification for AI-Advised Decision-Making**

ACM CHI 2024

### **Conformal Prediction for Deep Learning Classifiers**

A Symposium on Human+AI, The University of Chicago, October 2023

### **Visualizing Uncertainty Embedded in Probabilistic Graph Models**

IEEE VIS 2021 Virtual

### **Predictive Extensions to ERGMs and Applications in Real-time Monitoring of Organizational Social Networks**

Seventh International Workshop on Social Network Analysis (ARS'19)

## Honors and scholarships

### **Segal Design Institute Research Cluster Fellowship**

2020 – 2021

Northwestern University

Selected as a research fellow to advance knowledge of design innovation.

### **Computational Social Sciences Tuition Award**

2016 – 2018

The University of Chicago

Received a merit-based tuition scholarship during my M.A. program.

### **Regents' and Chancellor's Scholarship**

2012 – 2016

University of California, Berkeley

The most prestigious scholarship awarded to the top 2% of undergraduates.

## Skills

**Programming:** R, Python, SQL

**Web-based Prototyping:** HTML, CSS, JavaScript

**Developer Tools:** Node.js, Bootstrap, Webpack, React, Firebase, Git, Figma

**Information Visualization:** D3.js, ggplot2, igraph, Tableau

**Qualitative Methods:** Ethnography, Research Interview, Observational Study, Survey Design, Design of Experiment

**Quantitative Methods:** Social Network Analysis, Agent-based Modeling and Simulation, Bayesian Modeling, Game Theory, Information Design, Data and Predictive Analytics, Machine Learning, Artificial Neural Network