

# Dongping Zhang

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## Education

<b>Northwestern University</b> <i>Ph.D., M.S. in Technology and Social Behavior</i> ↳ <i>Dual Ph.D. in Computer Science and Communication Studies</i>	2018 – 2024 Evanston, IL
<b>The University of Chicago</b> <i>M.A. in Computational Social Science</i>	2016 – 2018 Chicago, IL
<b>University of California, Berkeley</b> <i>B.A. in Statistics, B.A. in Economics</i>	2012 – 2016 Berkeley, CA

## Research Experience

<b>MU Collective Research Lab</b> <i>Research Lead   PI: Jessica Hullman</i>	September 2019 – Present Evanston, IL
<ul style="list-style-type: none"><li>Developed advanced uncertainty quantification techniques to communicate uncertainty of ML/AI predictions.</li><li>Engineered innovative design strategies for prediction interfaces to support effective data-driven decision-making.</li><li>Conducted large-scale user studies and extracted quantitative insights via Bayesian hierarchical models.</li></ul>	
<b>Science of Networks in Communities Research Lab</b> <i>Research Lead   PI: Noshir Contractor</i>	July 2018 – August 2019 Evanston, IL
<ul style="list-style-type: none"><li>Utilized digital trace data and ML/AI models to construct large networks with intricate structural complexities.</li><li>Employed data mining and wrangling techniques to process and model large-scale user interaction datasets.</li><li>Analyzed the dynamics of tie formation, unveiling key patterns in social interactions within work organizations.</li></ul>	

## Projects

<b>Uncertainty Quantification for Black-Box AI Models</b>   <i>Convolutional Networks, PyTorch, User Study, Bayesian Modeling</i>
<ul style="list-style-type: none"><li>Utilized <i>conformal prediction</i> to enhance the reliability, transparency, and explainability of AI predictions in computer vision by addressing their inherent statistical uncertainty.</li><li>Designed and conducted a large-scale experiment with 600 participants, demonstrating how conformal prediction sets enhance the dependability of AI-advised decision-making.</li><li>Published in ACM CHI'24, the most prestigious Int'l. conference in HCI/AI and received a <b>Best Paper Honorable Mention Award (Top 5% of 4,028 paper submissions)</b>.</li></ul>
<b>Coordination of Human Strategic Decision-Making</b>   <i>Game Theory, Econometrics, Design of Experiment, Bayesian Modeling</i>
<ul style="list-style-type: none"><li>Investigated the concept of <i>performative prediction</i> and provided empirical evidence on how predictions can influence the outcome they try to predict due to human strategic reactions to predictions.</li><li>Designed a novel congestion game based on 2.1 million taxi trips data; contributed an innovative staged experiment design with 1,560 participants employing AI for strategic decision-making based on a shared prediction.</li><li>Contributed interface design strategies that foster trust and persuade behavioral changes in decision-making.</li><li>Published in ACM CSCW'24, the most prestigious Int'l. conference in computer-supported cooperative work.</li></ul>
<b>Uncertainty Visualization of Probabilistic Graph Models</b>   <i>Social Networks, InfoVis, Web-based Prototyping, User Study</i>
<ul style="list-style-type: none"><li>Designed and prototyped <i>Network Hypothetical Outcome Plot (NetHOPs)</i>, an innovative visualization tool for elucidating uncertainties in network predictions by probabilistic graph models.</li><li>Evaluated the utility of NetHOPs through a user study with 51 network experts, achieving estimates within 11% of the ground truth, underscoring its practical effectiveness.</li><li>Published in IEEE TVCG and presented at IEEE VIS'21, the most prestigious Int'l. conference in computer graphics.</li></ul>

## Technical Skills

**Programming:** R, Python, SQL  
**Web-based Prototyping:** HTML, CSS, JavaScript, Node.js, Bootstrap, Webpack, Firebase, Figma, Git  
**Information Visualization:** D3.js, ggplot2, igraph, Tableau  
**Qualitative Methods:** Design of Experiment, Survey Design, Research Interview, Observational Study, Ethnography  
**Quantitative Methods:** Social Network Analysis, Agent-based Modeling and Simulation, Bayesian Hierarchical Modeling, Empirical Game Theory, Information Design, Data and Predictive Analytics, Machine Learning, Artificial Neural Network