

# Dongping Zhang

+1 (320)-339-6779    dzhang@u.northwestern.edu    dpzhang.com    linkedin.com/dpzhang

## 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>	Expected 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

- Uncertainty Quantification for Black-Box AI Models** | *Convolutional Networks, PyTorch, User Study, Bayesian Modeling*
  - Utilized *conformal prediction* to enhance the reliability, transparency, and explainability of AI predictions in computer vision by addressing their inherent statistical uncertainty.
  - Designed and conducted a large-scale experiment with 600 participants, demonstrating how conformal prediction sets enhance the dependability of AI-advised decision-making.
  - Published in ACM CHI'24, the most prestigious Int'l. conference in HCI/AI.
- Coordination of Human Strategic Decision-Making** | *Game Theory, Econometrics, Design of Experiment, Bayesian Modeling*
  - Investigated the concept of *performative prediction* and provided empirical evidence on how predictions can influence the outcome they try to predict due to human strategic reactions to predictions.
  - 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.
  - Contributed interface design strategies that foster trust and persuade behavioral changes in decision-making.
  - Published in ACM CSCW'24, the most prestigious Int'l. conference in computer-supported cooperative work.
- Uncertainty Visualization of Probabilistic Graph Models** | *Social Networks, InfoVis, Web-based Prototyping, User Study*
  - Designed and prototyped *Network Hypothetical Outcome Plot (NetHOPs)*, an innovative visualization tool for elucidating uncertainties in network predictions by probabilistic graph models.
  - 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.
  - Published in IEEE TVCG and presented at IEEE VIS'21, the most prestigious Int'l. conference in computer graphics.

## 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