

# Xiaoying Pu

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## Research Interests

Information visualization, human-computer interaction

## Education

- 2022 Ph.D. in Computer Science and Engineering  
Thesis: *Integrating Visualization Grammars with the Task Language of Data Analysts*  
University of Michigan — *Ann Arbor, MI*
- 2020 M.S. in Computer Science and Engineering  
University of Michigan — *Ann Arbor, MI*
- 2017 B.S. in Computer Science and Engineering  
Bucknell University — *Lewisburg, PA*  
*Summa cum laude*. Minor: Mathematics

## Experiences

- 2022- Apple Inc. — *Seattle, WA*  
Software Development Engineer - UI  
Building visualizations and other UIs for data science and machine learning workflows.
- 2022 Sierra Nevada Research Institute at the University of California, Merced — *Merced, CA*  
Postdoctoral Scholar. Advisor: Lace Padilla, Ph.D.  
Investigated using uncertainty communication for the restoration of natural infrastructure
- 2017-22 University of Michigan — *Ann Arbor, MI*  
Graduate Student Research Assistant. Advisor: Matthew Kay, Ph.D.
- 2020 Microsoft Research — *New York City, NY*  
Research Intern. Mentors: Jake Hofman, Ph.D. and Dan Goldstein, Ph.D.

- 2019      National Renewable Energy Lab — *Golden, CO*  
Visualization Intern. Mentor: Kristi Potter, Ph.D.
- 2016      National Center for Atmospheric Research — *Boulder, CO*  
Summer Intern in Parallel Computational Science. Mentor: Rick Brownrigg, Ph.D.
- 2014-15   Bucknell University — *Lewisburg, PA*  
Undergraduate Researcher in Computer Science. Advisor: Evan Peck, Ph.D.  
Undergraduate Researcher in Geology. Advisor: Carl Kirby, Ph.D.

## Grants, Honors & Awards

- 2024      Best Paper Honorable Mention (top 5%) at CHI 2024 for “Odds and Insights: Decision Quality in Visual Analytics Under Uncertainty”, ACM CHI Conference on Human Factors in Computing Systems
- 2020      Best Paper Honorable Mention (top 5%) at CHI 2020 for “A Probabilistic Grammar of Graphics”, ACM CHI Conference on Human Factors in Computing Systems
- 2014-17   President’s Award for Distinguished Academic Achievement, Bucknell University
- 2016      GHC Scholar, Anita Borg Institute, \$900
- 2015      Travel Award, Explore Graduate Studies in CSE at University of Michigan, \$350  
  
Presentation Award (top 4%), Susquehanna Valley Undergraduate Research Symposium, \$100  
  
Honorable Mention, Mathematical Contest in Modeling — COMAP  
  
Bucknell Program for Undergraduate Research, “Improving Computer-Mediated Decision-Making via Physiological Signals from Wearable Sensors”, \$3000.
- 2014      Katherine Mabis McKenna Environmental Internship Program, “Feasibility of using freshwater mussels to monitor Ba and Sr contamination due to shale gas flowback water in Pennsylvania streams”, \$3500 stipend + \$600 material.

## Publications & Presentations

ACCEPTED

- 2024      Sarma, Abhraneel, **Xiaoying Pu**, Yuan Cui, Eli T Brown, Michael Correll, Matthew Kay. “Odds and Insights: Decision Quality in Visual Analytics Under Uncertainty.” To appear in *Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems*

CONFERENCE PROCEEDINGS, FULLY-REVIEWED AND ARCHIVAL

*Conferences are the main publication venues for computer science research.*

- 2023 **Pu, Xiaoying** and Matthew Kay. “How data analysts use a visualization grammar in practice.” In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*, pp. 1-22. 2023.
- 2022 Davis, Russell, **Xiaoying Pu**, Yiren Ding, Brian D. Hall, Karen Bonilla, Mi Feng, Matthew Kay, and Lane Harrison. “The risks of ranking: Revisiting graphical perception to model individual differences in visualization performance.” In *IEEE Transactions on Visualization and Computer Graphics*. 2022.
- 2021 **Pu, Xiaoying**, Sean Kross, Jake M. Hofman, Daniel G. Goldstein. “Datamations: Animated Explanations of Data Analysis Pipelines.” In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*, pp. 1-14. 2021.
- 2020 **Pu, Xiaoying**, Matthew Kay. “A Probabilistic Grammar of Graphics”. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*, pp. 1-13. 2020.
- Pesé, Mert D., **Xiaoying Pu**, and Kang G. Shin. “SPy: Car Steering Reveals Your Trip Route!” In *Proceedings on Privacy Enhancing Technologies*. 2020, No. 2: 155-174.
- 2018 **Pu, Xiaoying**, and Matthew Kay. “The Garden of Forking Paths in Visualization: A Design Space for Reliable Exploratory Visual Analytics: Position Paper.” In *2018 IEEE Evaluation and Beyond—Methodological Approaches for Visualization (BELIV)*, pp. 37-45. IEEE, 2018.

WORKSHOP PAPERS AND POSTERS, LIGHTLY-REVIEWED AND NON-ARCHIVAL

- 2023 Wacharamanotham, Chat, Fumeng Yang, **Xiaoying Pu**, and Abhraneel Sarma. “Transparent Practices for Quantitative Empirical Research.” In *Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing Systems*, pp. 1-5. 2023.
- 2022 Wacharamanotham, Chat, Fumeng Yang, **Xiaoying Pu**, Abhraneel Sarma, and Lace Padilla. 2022. “Transparent Practices for Quantitative Empirical Research.” In *CHI Conference on Human Factors in Computing Systems Extended Abstracts*, pp. 1-5. 2022.
- 2021 **Pu, Xiaoying**, Matthew Kay, Steven M. Drucker, Jeffrey Heer, Dominik Moritz, and Arvind Satyanarayan. “Special Interest Group on Visualization Grammars.” In *Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems*, pp. 1-3. 2021.
- 2019 **Pu, Xiaoying**. “Visual analytics techniques for uncertainty in power systems simulation ensembles.” Presentation at *VIS 2019 Application Spotlight — Visualization Paradigms in the Renewable Energy Space*. 2019.

**Pu, Xiaoying**, Matthew Kay, Michael Correll, and Eli Brown. “Unbiasing Visual Data Exploration in the Garden of Forking Paths.” In *CHI 2019 Workshop on Human-Centered Study of Data Science Work Practices*. 2019.

**Pu, Xiaoying**, Licheng Zhu, Matthew Kay, and Frederick Conrad. 2019. “Designing for Pre-registration: a User-Centered Perspective.” In *Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems*, pp. 1-6. 2019.

2018 Kay, Matthew, **Xiaoying Pu**, and Frederick Conrad. Preregistration: Assessing Whether the Pledge Matches the Report. Presentation at *APA Annual Convention, San Francisco, CA*. 2018.

2014 **Pu, Xiaoying** and Carl S. Kirby. “Feasibility of using freshwater mussels to monitor Ba and Sr contamination due to shale gas flowback water in Pennsylvania streams.” In *Geological Society of America Abstracts with Programs*, Vol. 46, No. 6, p.315. 2014.

## Teaching

### INSTRUCTOR

2022 Transparent Practices for Quantitative Empirical Research — *CHI 2022 online course*,  $N=22$   
Designed and delivered a live-coding R tutorial for transparency-oriented visualizations.

### GRADUATE STUDENT INSTRUCTOR

WN 2021 EECS 203 - Discrete Mathematics (online,  $N=900+$ )  
Taught weekly discussion sections, designed homework, and hosted office hours as part of an instruction team.

### UNDERGRADUATE TEACHING ASSISTANT

Answered student questions in lab.

SP 2016 CSCI 204L - Introduction to Computer Science II lab  
CSCI 206L - Computer Organization and Programming lab  
FA 2016 CSCI 208L - Programming Languages lab  
FA 2014 PHYS 211L - Classical & Modern Physics lab

## TEACHING TRAINING

- 2021 Center for Research on Learning and Teaching (CRLT) training at the University of Michigan  
Two-part training that covered learning science, and inclusive & equitable teaching.
- SP 2017 UNIV 239 - Working with Writers: Theory and Practice at Bucknell  
Semester-long training course for working as a writing consultant.

## Service

### PAPER REVIEWS

- 2024 CHI 2024 Papers with Special Recognitions for Outstanding Reviews.
- 2023 CHI 2023 Papers with Special Recognitions for Outstanding Reviews, VIS 2023 Full Papers (highly useful), JoVI (Journal of Visualization and Interaction) experimental-track paper.
- 2022 VIS 2022 Papers, CHI 2022 Papers with Special Recognitions for Outstanding Reviews.
- 2021 TVCG 2021 Papers, VIS 2021 Papers, short papers, TREX workshop
- 2020 CHI 2020 Papers with Special Recognitions for Outstanding Reviews
- 2019 CHI 2019 Late Breaking Work, alt.chi, VIS 2019 InfoVis Papers

### OUTREACH

- 2023 A Hands-On Tutorial for Visualizing Model Uncertainty  
Hosted by R-Ladies NYC (registered  $N = 50$ )
- 2022 Carillon Studio Concert: Broadening the Carillon Repertoire at the “Diversity and Belonging: Unsung Keyboard Stories” conference  
Performed two carillon pieces from *Music by Black Composers*.
- 2020 Earth Day 50 Teach-Out, University of Michigan  
Performed a nature-themed carillon arrangement.
- 2019-20 Data Visualization Rackham Interdisciplinary Workshops, University of Michigan  
Student coordinator for a university-wide visualization speaker series.
- 2018-19 Middle school outreach program with GirlsEncoded, University of Michigan
- SP 2016 President. Bucknell ACM Women-in-Computing Chapter
- 2016 First Bucknell Admissions Outreach for promoting diversity

## STUDENT MENTORING

2021	Sophia Wang, undergraduate student at the University of Michigan
2020-21	Daniel Wang, undergraduate student at Northwestern University
2019-20	Qiang Cheng (Statistics), undergraduate student at the University of Michigan
2018-19	Dillon Zaugg, undergraduate Research Opportunity Program (UROP) at the University of Michigan

• Last updated: August 25, 2024 •