

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- Sierra Nevada Research Institute at the University of California, Merced — *Merced, CA*
Postdoctoral Scholar. Advisor: Lace Padilla, Ph.D.
Facilitating Restoration of Natural Infrastructure Using Uncertainty Communication
- 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

- 2020 Best Paper Honorable Mention (top 5%) 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

IN PREPARATION

- 2022 **Pu, Xiaoying**, and Matthew Kay. “Evaluating Visualization Grammar in Data Analysis.” Preparing for submission to CHI 2023.
- 2022 **Pu, Xiaoying**^{*1}, Abhraneel Sarma^{*}, Michael Correll, Eli T. Brown, and Matthew Kay. “Odds and Insights: Improving Evaluation of Decision-making Quality in Visual Analytics.”

UNDER REVIEW

- 2022 Davis, Russell, **Xiaoying Pu**, Yiren Ding, Brian Hall, Karen Bonilla, Mi Feng, Lane Harrison, and Matthew Kay. “The Risks of Ranking: Revisiting Graphical Perception to Model Individual Differences in Visualization Performance.”

¹ *: Equal contribution.

CONFERENCE PROCEEDINGS, FULLY-REVIEWED AND ARCHIVAL

Conferences are the main publication venues for computer science research.

- 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

- 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

- 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

- 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: October 14, 2022 •