

CONTACT INFORMATION	<a href="mailto:xpu@umich.edu">xpu@umich.edu</a> <a href="https://xiaoyingpu.github.io">xiaoyingpu.github.io</a>
RESEARCH INTERESTS	Uncertainty visualizations, visual analytics, human-computer interaction.
EDUCATION	<p><b>University of Michigan</b>, Ann Arbor, MI</p> <p>Ph.D. candidate in Computer Science and Engineering 2017- <b>Bucknell University</b>, Lewisburg, PA</p> <p>B.S., <a href="#">Computer Science and Engineering</a>, 4.0/4.0. 2013 - 2017 Minor: Mathematics</p>
RESEARCH EXPERIENCES	<p><b>Graduate Student Research Assistant</b> Fall 2017 - Advisor: Matthew Kay, Ph.D. (School of Information) Computer Science and Engineering, University of Michigan, Ann Arbor, MI Member of the <a href="#">Midwest Uncertainty Collective</a>.</p> <p><i>Research projects:</i></p> <ul style="list-style-type: none"> <li>• Using Bayesian hierarchical models to study decision-making aided by uncertainty visualizations in MTurk experiments.</li> <li>• Designed and implemented a Probabilistic Grammar of Graphics.</li> <li>• Proposed a design space for reliable exploratory visual analytics.</li> <li>• Conducted a qualitative interview study to understand the use of preregistration.</li> </ul> <p><b>Computer Science (Visualization) Intern</b> Summer 2019 <i>Uncertainty visualization, interdisciplinary collaboration</i> Mentor: Kristi Potter, Ph.D. Insight Center National Renewable Energy Laboratory (NREL), Golden, CO</p> <ul style="list-style-type: none"> <li>• Context: energy systems (power grid) integration research.</li> <li>• Iteratively prototyped interactive visualizations with scientists.</li> <li>• Designed two new visual representations for dynamical system concepts.</li> <li>• Reviewed uncertainty visualization techniques applied to visual analytics.</li> </ul> <p><b>Summer Internship in Parallel Computational Science</b> Summer 2016 <i>Visualization, interdisciplinary collaboration</i> Advisor: Rick Brownrigg, Ph.D. Computational and Information Systems Lab (CISL) National Center for Atmospheric Research (NCAR), Boulder, CO</p> <ul style="list-style-type: none"> <li>• Examined and cleaned climate model outputs with NCL and GDAL.</li> <li>• Visualized climate model similarity with multidimensional scaling.</li> <li>• Used an MIQP optimizer to achieve a non-overlapping layout.</li> <li>• Collaborated closely with NCAR climate scientists.</li> </ul>

## Undergraduate Researcher

May 2015 - Dec 2015

*Physiological computing, human-computer interaction*

Advisor: Evan M. Peck, Ph.D.

Department of Computer Science at Bucknell University

- Extended and optimized a physiological computing framework.
- Adopted MQTT protocol for streaming data across platforms.
- Used machine learning (Weka) to classify real-time cognitive load.
- Designed protocol to quantify implicit bias in decision-making.

## Undergraduate Researcher

Summer 2014

*Environmental geochemistry*

Advisor: Carl S. Kirby, Ph.D.

Department of Geology & Environmental Geosciences at Bucknell University

- Collected and analyzed field water quality data.
- Used freshwater mussels as biomarkers for heavy metal contaminants.
- Analyzed high spatial resolution *in-situ* concentration of Barium and Strontium in thin-sections from electron probe microanalysis (EPMA).
- Presented a poster at Geological Society of America annual meeting.

## PUBLICATION

**Xiaoying Pu** and Matthew Kay. 2018. The Garden of Forking Paths in Visualization: A Design Space for Reliable Exploratory Visual Analytics. *2018 IEEE Evaluation and Beyond - Methodological Approaches for Visualization (BELIV 2018)*.

## CONDITIONALLY ACCEPTED

**Xiaoying Pu**, and Matthew Kay. 2019. A Probabilistic Grammar of Graphics. *CHI 2020*. ( $\geq 4.5/5$  scores)

## IN PRESS

Mert Pese, **Xiaoying Pu**, Kang Shin. 2019. SPy: Car Steering Reveals Your Trip Route! *Proceedings on Privacy Enhancing Technologies (PoPETs)*.

## PRESENTATIONS

**Xiaoying Pu**. 2019. Visual analytics techniques for uncertainty in power systems simulation ensembles. *VIS 2019 Application Spotlight — Visualization Paradigms in the Renewable Energy Space*.

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

**Xiaoying Pu**, Licheng Zhu, Matthew Kay, and Frederick Conrad. 2019. Designing for Preregistration: a User-Centered Perspective. In *CHI Conference on Human Factors in Computing Systems Extended Abstracts (CHI19 Extended Abstracts)*, May 4-9, 2019, Glasgow, Scotland UK. ACM, New York, NY, USA, 6 pages. <https://doi.org/10.1145/3290607.3312862>

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

*Annual Convention, San Francisco, CA.*

**Xiaoying Pu.** 2016. Visualizing Intermodel Comparison of Climate Simulations. *SIParCS program student presentations.*

**Xiaoying Pu** and C.S. Kirby. 2014. Feasibility of using freshwater mussels to monitor Ba and Sr contamination due to shale gas flowback water in Pennsylvania streams. *Geological Society of America Abstracts with Programs, Vol. 46, No. 6, p.315.* (Poster presentation at 2014 Geological Society of America Annual Meeting in Vancouver, BC.)

IN PREPARATION      C.S. Kirby and **Xiaoying Pu**, Feasibility of using freshwater mussels to monitor Ba and Sr contamination due to shale gas flowback water in Pennsylvania streams. Environmental Science & Technology or Applied Geochemistry.

AWARDS                      GHC Scholar — Anita Borg Institute                      Oct. 2016  
                                         Competitive stipend for attending the Grace Hopper Celebration, \$900  
                                         Oral Presentation Award (top 4%)                      Aug. 2015  
                                         Susquehanna Valley Undergraduate Research Symposium, \$100  
                                         Honorable Mention                      Feb. 2015  
                                         Mathematical Contest in Modeling — COMAP

HONOR                      Tau Beta Pi  
SOCIETIES                      Phi Beta Kappa (7 out of 900)

GRANTS                      Bucknell Program for Undergraduate Research                      Summer 2015  
                                         “Improving Computer-Mediated Decision-Making via Physiological  
                                         Signals from Wearable Sensors”, \$3000.  
                                         Katherine Mabis McKenna Environmental Internship Program                      Summer 2014  
                                         “Feasibility of using freshwater mussels to monitor Ba and Sr  
                                         contamination due to shale gas flowback water in Pennsylvania  
                                         streams.”, \$3500 stipend + \$600 material.

GRADUATE                      • Probability and Distribution Theory  
COURSEWORK                      • Natural Language Processing  
                                         • Machine Learning  
                                         • Social Computing Systems  
                                         • Principles of Real-time Computing  
                                         • Advanced Topics in Computer Architecture  
                                         • Carillon Performance & Literature

REVIEW                      • CHI 2020 Papers, CHI 2019 Late Breaking Work, CHI 2019 alt.chi  
EXPERIENCE                      • VIS 2019 InfoVis Papers

TEACHING EXPERIENCES	<b>Undergraduate Teaching Assistant</b>	
	• CSCI 208L - Programming Languages lab	Fall 2016
	• CSCI 204L - Introduction to Computer Science II lab	Spring 2016
	• CSCI 206L - Computer Organization and Programming lab	Spring 2016
	• PHYS 211L - Classical & Modern Physics lab	Fall 2014
SERVICE	Data Visualization Rackham Interdisciplinary Workshop	Fall 2019 -
	Middle school outreach program with GirlsEncoded	2018 - 2019
	President. Bucknell ACM Women-in-Computing Chapter	Spring 2016
	First Bucknell Admissions Outreach for promoting diversity	Jan. 2016
SKILLS	• R, Python, C/C++, Java, Javascript, Verilog, and MATLAB.	
	• Visualization, statistical modeling, experimental design, applied machine learning, computer networks, and qualitative interview.	