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

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).

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)*.

UNDER REVIEW

Xiaoying Pu, and Matthew Kay. 2019. *A Probabilistic Grammar of Graphics*.

PRESENTATIONS

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 SOCIETIES	Tau Beta Pi	
	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
GRADUATE COURSEWORK	<ul style="list-style-type: none"> • Probability and Distribution Theory • Natural Language Processing • Machine Learning • Social Computing Systems • Principles of Real-time Computing • Advanced Topics in Computer Architecture • Carillon Performance & Literature 	
TEACHING EXPERIENCES	Undergraduate Teaching Assistant	
	• 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	Winter 2018 -
	President. Bucknell ACM Women-in-Computing Chapter	Spring 2016
	First Bucknell Admissions Outreach for promoting diversity	Jan. 2016
SKILLS	<ul style="list-style-type: none"> • R, C/C++, Java, Python, Verilog, and MATLAB. • Statistical modeling, experimental design, applied machine learning, visualization, computer networks, and qualitative interview. 	