

CONTACT  
INFORMATION

xpu@umich.edu  
xiaoyingpu.github.io

RESEARCH  
INTERESTS

Uncertainty visualizations, statistically reliable visual analytics, and open science practices.

## EDUCATION

**University of Michigan**, Ann Arbor, MI

Ph.D. precandidate in Computer Science and Engineering 2017-

**Bucknell University**, Lewisburg, PA

B.S., [Computer Science and Engineering](#), 4.0/4.0. 2013 - 2017

RESEARCH  
EXPERIENCES**Graduate Student Research Assistant**

Fall 2017 -

*Uncertainty visualizations, open science practices*

Advisor: Matthew Kay, Ph.D. (School of Information)

Computer Science and Engineering, University of Michigan, Ann Arbor, MI

Member of the [Midwest Uncertainty Collective](#)

*Research projects:*

- Using Bayesian hierarchical models to study decision-making aided by uncertainty visualizations in MTurk experiments.
- Systematizing the categorization and generation of uncertainty visualizations.
- Proposed a design space for reliable exploratory visual analytics.
- Conducted a qualitative interview study to understand the use of preregistration.

**Summer Internship in Parallel Computational Science** Summer 2016

*Visualization*

Advisor: Rick Brownrigg, Ph.D.

Computational and Information Systems Lab (CISL)

National Center for Atmospheric Research (NCAR), Boulder, CO

- 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

- 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	<b>Pu, X.</b> and Kay M., “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).
PRESENTATIONS	<p>Kay, M., <b>Pu, X.</b>, and Conrad, F. “Preregistration: Assessing Whether the Pledge Matches the Report”. Presentation at the APA Annual Convention, San Francisco, CA. August 2018.</p> <p><b>Pu, X.</b>, “Visualizing Intermodel Comparison of Climate Simulations”. SIParCS program student presentations. July 2016.</p> <p><b>Pu, X.</b>, “Decision-making via Wearable Biosensors”. Susquehanna Valley Undergraduate Research Symposium. Oral presentation. August 2015.</p> <p><b>Pu, X.</b> and Kirby, C.S., “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.)</p>
IN PREPARATION	Kirby, C.S. and <b>Pu, X.</b> , “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	<p>GHC Scholar — Anita Borg Institute Oct. 2016 Competitive stipend for attending the Grace Hopper Celebration, \$900</p> <p>Oral Presentation Award (top 4%) Aug. 2015 Susquehanna Valley Undergraduate Research Symposium, \$100</p> <p>Honorable Mention Feb. 2015 Mathematical Contest in Modeling — COMAP</p>
HONOR SOCIETIES	<p>Tau Beta Pi</p> <p>Phi Beta Kappa (7 out of 900)</p>
GRANTS	<p>Bucknell Program for Undergraduate Research 2015</p>

“Improving Computer-Mediated Decision-Making via Physiological Signals from Wearable Sensors”, \$3000.

Katherine Mabis McKenna Environmental Internship Program 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  
COURSEWORK

- 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

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

- R, C/C++, Java, Python, Verilog, and MATLAB.
- Statistical modeling, experimental design, applied machine learning, visualization, computer networks, and qualitative interview.