Melanie Bancilhon

mbancilhon@wustl.edu

Research Interests

Human-Computer Interaction, Data Visualization, Decision-Making, Human-Centered AI

Summary

My research interests are at the intersection of Human-Computer Interaction, Data Visualization and User-Centered AI. My doctoral research focuses on understanding how people with different individual and cognitive traits reason and make decisions using data visualization. In my work, I have designed innovative experiments by leveraging interdisciplinary methods to capture various human factors such as working memory capacity, spatial ability, numeracy, risk behavior and visual literacy. I also have practical experience developing user-centric AI frameworks and interfaces.

Education

2019 - Present	**Washington University in St. Louis** Ph.D. in Computer Science *Advisor*: Alvitta Ottley *Committee:* Cindy Xiong, Alexa Siu, Chien-Ju Ho, William Yeoh
2015 - 2019	**Smith College** B.A. Computer Science; B.A. Art and Architecture

Publications

In submission	Why We Trust: The Viewer's Perspective on Trust in Data Visualization McKinley O., Pandey S., **Bancilhon M.** & Ottley A.
CHI '23	Why Combining Text and Visualization Could Improve Bayesian Reasoning: A Cognitive Load Perspective **Bancilhon M.**, Wright AJ., Sunwoo H., Crouser R J. & Ottley A. *ACM Conference on Human Factors in Computing Systems (CHI)*
In submission	DocSpect: A Mixed Initiative System to Optimize Reviewing Strategies in Contract Inspection

Bancilhon M., Siu A., Rossi R. & Lipka N.

In submission	Human-Centered Design for Microservice Recommendation **Bancilhon M.**, Krishna R. & Rofrano J.
ICAPS '22	VizXP: A Visualization Framework for Conveying Explanations to Users in Model Reconciliation Problems Kumar A., Vasileiou S., **Bancilhon M.**, Ottley A. & Yeoh W. *International Conference on Automated Planning and Scheduling (ICAPS)*
PLOS ONE '21	Streetonomics: Quantifying culture using street names. **Bancilhon M.**, Constantinides M., Bogucka EP., Aiello LM. & Quercia D. *PLoS ONE 16(6): e0252869*
IEEE VIS '20	Let's Gamble: How a Poor Visualization Can Elicit Risk Behavior. **Bancilhon, M.**, Liu, Z. & Ottley, A. *IEEE Visualization Conference (VIS) Short Papers*
IEEE CG&A '20	Cartographic Design of Cultural Maps. Bogucka, E.P., Constantinides, M., Aiello, L.M, Quercia, D., So, W. & **Bancilhon, M.** *IEEE Transactions on Computer Graphics and Applications (CG&A)*

Book Chapter

Springer 2023	Improving Evaluation Using Visualization Decision-Making Models: A Practical Guide. **Bancilhon, M.**, Padilla, L., Ottley, A. Visualization Psychology. *Springer Nature.*

Peer Reviewed Workshop Papers & Posters

IEEE VIS '23	Beyond English: Centering Multilingualism in Data Visualization Rakotondravony, N., Dhawka, P., & **Bancilhon, M.** *IEEE VIS Workshop on Visualization for Social Good*
IEEE TVCG '20	Did You Get The Gist Of It? Understanding How Visualization Impacts Decision-Making. **Bancilhon, M.** & Ottley, A. *IEEE VIS Workshop on Visualization Psychology*

IEEE VIS '20	Expectation Versus Reality: The Failed Evaluation of a Mixed-Initiative Visualization System.
	Ha, S., **Bancilhon, M.** & Ottley, A.
	IEEE VIS Fail Fest: A Workshop on Celebrating the Scientific Value of Failure

IEEE VIS '19	Icons are Best: Ranking Visualizations for Proportion Estimation.
	Liu, Z., **Bancilhon, M.** & Ottley, A.
	IEEE Visualization Conference (VIS) Posters

Professional Experience

Summer '23	**IBM	Research Intern**
	AI, Yorktown Heights

Human-AI Collaboration for Microservice Recommendation:
• Conducted qualitative interviews with software engineers to investigate their workflow and shortcomings when using current microservice recommendation tools.
• Developed a framework to augment an AI-based microservice recommendation algorithm by accounting for user interaction patterns.
• Designed and developed an interactive and transparent visual interface that captures user interaction to facilitate human-AI collaboration.
• Conducted observational and qualitative evaluation of interactive interface.

Summer '22	**Adobe	Research Intern**
	Document Intelligence, San Jose

A Mixed Initiative System to Optimize Reviewing Strategies in Contract Inspection:
• Lead formative interviews with knowledge workers responsible for reviewing contracts to gain insights into their workflow, processes and impact on business decisions.
• Developed an optimal contract reviewing strategy which aims to reduce contract annotation time while generating probabilistic business projections.
• Built an interactive explainable interface that supports the proposed optimal reviewing framework and allows users to view AI outcomes and confidence scores and override AI-generated labels.

Summer '18	**Nokia Bell Labs**
	Social Dynamics Group, Cambridge UK

• Examined urban historical, cultural and societal patterns encoded in a city's network of street names using data mining techniques.

Teaching Experience

Spring 2022   Visualization Design Studio
Columbia School of Nursing
Guest Lecturer

Spring 2021   Predicting Human Decisions
Worcester Polytechnic Institute
Guest Lecturer

Fall 2020   Introduction to Visualization
Washington University in St. Louis
Teaching Assistant

Awards & Distinctions

2022   Recipient of Inclusivity and Diversity Scholarship to attend IEEE VIS

2019 - Present   Sigma Xi Honor Society

2018   Grace Hopper Celebration Scholar

2021   NSF SCH Workshop Smart Health in the AI and COVID Era
Student Awardee

Outreach & Service

2021, 2022   **Workshop Organizer & Program Committee**
As a member of student committee, I co-organized the Visualization for Communication (VisComm) workshop at IEEE VIS

2020 - Present   **Reviewer**
TVCG (2023), CHI (2023), CSCW (2023), VIS (2020, 2022)

2021 - 2023   **Mentor - WashU First Gen Program**
I mentored undergraduate first generation college students at WashU. The

mission of this program is to create and maintain an environment that supports and provides resources to first generation college students.

2020 - 2023	**Graduate Student Senate Representative at WashU** I served as the Graduate Student Senate representative of the Department of Computer Science and Engineering, where I facilitated communication between the department and the student body. I organized activities for the student body such as panel talks centered around topics such as Mental Health in STEM.
2022	**Mentor - Tapia Conference** I was a WashU representative, recruiter and mentor at the Tapia Conference
2021, 2022	**Mentor - BrightPath STEAM** Gave lectures and led interactive data activities for the BrightPath STEAM academy whose mission is to increase the representation of black people in the arts and sciences.

Technical Strengths

Research Methodologies

Usability testing, Survey Design, Gamified Experiments, Participatory Design, Qualitative Interviews, Quantitative Data Analysis, Thematic Analysis, Mixed Design Methods, A/B testing

Programming Languages

Web Development: HTML, Javascript, CSS; Data Analysis: Python, R; Others: Swift, SQL

Frameworks and Tools

D3.js, Dash, Qualtrics

Languages

French (native), English (fluent)