

Dr. Kathryn (Katy) Williams

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- Assistant Professor of Computer Science
- Research interest in data visualization theory, human-computer interaction, and visualizations for high-performance computing analysis

GitHub: [kawilliams](https://kawilliams.github.io/)
<https://kawilliams.github.io/>
Data Vis Lab:
<https://davidson-data-vis-lab.github.io/>

· · · · · RESEARCH INTERESTS: DATA VISUALIZATION · HUMAN-COMPUTER INTERACTION · · · · ·

EDUCATION

- 2023 Ph.D., Computer Science, University of Arizona
Advisor: Kate Isaacs
Dissertation: “It’s a Jungle Out There: Data abstraction elephants and mental models”
- 2019 M.S., Computer Science, University of Arizona
- 2017 B.S., Computer Science, Davidson College

PUBLICATIONS

As is the custom in computer science publications, the author with the most significant contribution is listed first, with students listed first and faculty listed afterward.

C. Scully-Allison, I. Lumsden, **K. Williams**, J. Bartels, M. Taufer, S. Brink, A. Bhatele, O. Pearce, K. Isaacs, “Design Concerns for Integrated Scripting and Interactive Visualization in Notebook Environments” in *IEEE Transactions on Visualization and Computer Graphics*, vol. 30, no. 9, pp. 6572–6585, Sept. 2024, doi: 10.1109/TVCG.2024.3354561.

K. Williams, A. Bigelow, and K. E. Isaacs. Data Abstraction Elephants: The Initial Diversity of Data Idioms and Mental Models. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems (CHI '23)*. Association for Computing Machinery, New York, NY, USA, Article 803, 1–24.

A. Bigelow, **K. Williams**, and K. E. Isaacs. Guidelines For Pursuing and Revealing Data Abstractions. *IEEE Transactions on Visualization and Computer Graphics (Proceedings of InfoVis '20)*, 27:1503–1513, Feb. 2021.

S. Brink, I. Lumsden, C. Scully-Allison, **K. Williams**, O. Pearce, T. Gamblin, M. Taufer, K. E. Isaacs, and A. Bhatele. Usability and performance improvements in Hatchet. In *Proceedings of the 2020 IEEE/ACM International Workshop on HPC User Support Tools (HUST) and Workshop on Programming and Performance Visualization Tools (ProTools)*, Nov. 2020.

S. R. Brandt, A. Bigelow, S. Sakin, **K. Williams**, K. E. Isaacs, K. Huck, R. Tohid, B. Wagle, S. Shirzad, and H. Kaiser. JetLag: An interactive, asynchronous array computing environment. In *Proceedings of the 2020 Practice and Experience in Advanced Research Computing (PEARC) Conference*, July 2020.

K. Williams, A. Bigelow, and K. Isaacs. Visualizing a moving target: A design study on task parallel programs in the presence of evolving data and concerns. in *IEEE Transactions on Visualization and Computer Graphics (Proceedings of InfoVis '19)*, 26:1118–1128, Jan. 2020.

R. Tohid, B. Wagle, S. Shirzad, P. Diehl, A. Serio, A. Kheirhahan, P. Amini, **K. Williams**, K. Isaacs, K. Huck, S. Brandt, and H. Kaiser. Asynchronous execution of Python code on task-based runtime systems. In *Proceedings of the Fourth International IEEE Workshop on Extreme Scale Programming Models and Middleware (ESPM2)*, Nov. 2018.

PRESENTATIONS

K. Williams. Why Datasets Are Like Elephants: An Introduction to Data Visualization. Contributed Talk. STEAM Week, hosted by Superposition Fremont Chapter (an international non-profit bridging the gender gap in STEM). Fremont, CA, USA (remote). August 22, 2023.

K. Williams. Data Abstraction Elephants: The Initial Diversity of Data Idioms and Mental Models. Paper Presentation. CHI '23, Hamburg, Germany. April 23-28, 2023.

K. Williams. Different Data Elephants. Contributed Talk. Women in Data Science - Data Blitz. Tucson, AZ, USA, April 22, 2022.

K. Williams. Visualizing Call Trees in Jupyter Notebooks with Hatchet. Contributed Talk. 2020 LLNL Summer SLAM!. Livermore, CA, USA, July 26, 2020.

K. Williams. Visualizing a moving target: A design study on task parallel programs in the presence of evolving data and concerns. Paper Presentation. IEEE VIS 2019, Vancouver, BC, Canada, October 22, 2019.

K. Williams. Visualizing large-scale distributed computing expression evaluation. Poster. 2018 CRA-W Grad Cohort for Women, San Francisco, CA, USA, April 13, 2018.

WORKSHOPS

K. Williams and S. Wadgyamar. "How to Make a Great Research Poster". Workshop. Student Research Community lunch series, Davidson College, Davidson, NC. June 11, 2025.

STUDENT POSTERS

Y. Yolcu, **K. Williams.** Visualizing Course Requirements for Majors. Poster. Fall Research Symposium, Davidson College, Davidson, NC. September 16, 2025.

Y. Ahmed, **K. Williams.** Investigating the Effect of Right-to-Left Timelines with Bilingual Speakers. Poster. Fall Symposium, Davidson College, Davidson, NC, September 17, 2024.

K. Hu, **K. Williams.** Serendipitous Search on NYC Events. Poster. Fall Symposium, Davidson College, Davidson, NC, September 17, 2024.

D. Yoder, **K. Williams.** From Tabular to Textual: A Typology-based Approach to Evaluating How AI Generates Data Visualizations. Poster. Verna Miller Case Symposium, Davidson College, Davidson, NC, 2025.*

* Work conducted during summer 2024; however, the author was abroad during the Fall Symposium and plans to present in spring

STUDENT TALKS

Y. Ahmed, K. Hu. The Data Vis Lab: Summer Report. Math/CS Coffee, Davidson College, September 10, 2024.

GRANTS AND AWARDS

2024. DRI (Davidson Research Initiative), \$5,000.

2024. FS&R (Faculty Study and Research), \$4,944.

COMMUNITY INVOLVEMENT

Presenter, STEAM Week. Hosted by Superposition Fremont Chapter, an international non-profit bridging the gender gap in STEM. Fremont, CA, USA (remote). August 22, 2023.

AWARDS

Galileo Circle Scholar. College of Science, University of Arizona, April 2020.

Awarded 2nd place for Best Speaker. Women in Data Science - Data Blitz, April 22, 2022.

PROFESSIONAL EXPERIENCE

Davidson College, North Carolina — *Assistant Professor of Computer Science*

JULY 2023 - present

Research Topics: mental models of data; visualizations of event data and music concert data; how AI interacts with data visualizations

Teaching:

- CSC 121 Programming and Problem Solving (Fall 2023 (2 sections), Spring 2024, Fall 2024, Spring 2025 (2 sections), Spring 2026)
- CSC 221 Data Structures (Fall 2025 (2 sections))
- CSC 362 Data Visualization (Spring 2024, Spring 2025, Spring 2026)
- CSC 363 Human Computer Interaction (Fall 2024, Fall 2025)
- CSC 391-C Concert Program App Dev (Independent Study with Katherine Hu)

University of Arizona, Arizona — *Graduate Research Assistant: Visualization Research*

AUGUST 2017 - MAY 2023 (ON LEAVE AUGUST 2020 - MAY 2021)

Supervisor: Dr. Kate Isaacs

Research Topics: data abstractions and mental models; interactive tree visualizations for high-performance computing data

Teaching: Teaching Assistant for CSC 343 Human-Computer Interaction during Spring 2020

University of Arizona, Tucson — *Graduate Research Assistant: Student Demographic Data Analysis*

AUGUST 2022 - DECEMBER 2022

Supervisor: Dr. Josh Levine

Research Topic: Demographic analysis of students in introductory computing courses for the Center of Inclusive Computing

Center for Applied Artificial Intelligence, University of Chicago — *Data Visualization Expert*

APRIL 2021 - AUGUST 2021

Supervisors: Emily Bembeneck, Sendhil Mullainathan

Research topic: Public communication of bias in healthcare and algorithmic behavioral science on faces

Lawrence Livermore National Lab, remote — *Computing Scholar Intern*

JUNE 2020 - AUGUST 2020

Supervisor: Stephanie Brink

Research topic: Call-tree visualizations in Jupyter notebooks

Swimmerd, Virginia Beach — *Web Developer Intern*

MAY 2019 - AUGUST 2019

Supervisor: Nate Tschohl

Interest: Interface for college recruiting to determine a swimmer's rank at the conference and national level

MENTORSHIP

- 2024: 2nd reader for Pauline Cha's thesis
- 2026: Thesis committee member for Vincent Reynolds and Asuna Dai
- 2025: Thesis committee member for Paige Pakenas, Grant Harkins, and Kenan Woods
- Major advisor
- Holistic advisor (2024-2026)

LEADERSHIP & SERVICE

2024-2025	Advising Working Group member
2024-2028	Marshall
2025 - ongoing	Founder and Organizer of VIS-SEA, meetup
2024-2025	Academic Advising committee member
2023-2024	Curriculum Assessment Committee member
2022, 2019, 2018	Co-Chair of Student Volunteers, IEEE VIS 2023 and 2024
2018 - 2020	Student Volunteer, IEEE VIS
2018	Secretary, Social Chair. Computer Science Graduate Student Council, University of Arizona Student Volunteer. SC (Super Computing Conference)

SOFTWARE

CSC Course Dependency Graph <https://davidson-data-vis-lab.github.io/demos/course-graphs/cs-final-graph/index.html>

- Repository: <https://github.com/heyitsyurda/Forced-Graph->

Concert Program App <https://online-concert-program-mobile-web.vercel.app/>

Roundtrip <https://github.com/HDC-Arizona/roundtrip>

Traveler Tree <https://github.com/HDC-Arizona/traveler-tree>