Dr. Kathryn (Katy) Williams

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GitHub: kawilliams
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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

· · · · · 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

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. Kheirkhahan, 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 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.

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

Research Topics: mental models of ensembles of performance data
Teaching: CSC 121 Programming and Problem Solving (Fall 2023, 2 sections)

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, Arizona — *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

Swimnerd, Virginia Beach — *Web Developer Intern*
MAY 2019 - AUGUST 2019

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

Project PRONTO, Davidson College — *Web Application Developer*
MAY 2015 - AUGUST 2016

Supervisor: Laurie Heyer

Team: Web applications to streamline processes at Davidson College and in the community

LEADERSHIP & SERVICE

2023	Co-Chair of Student Volunteers, IEEE VIS
2022, 2019, 2018	Student Volunteer, IEEE VIS
2018 - 2020	Secretary, Social Chair. Computer Science Graduate Student Council, University of Arizona
2018	Student Volunteer. SC
2017	Captain. Davidson College Swimming and Diving Team, Davidson College
2016-2017	Co-President. FICSIT (Females in Computer Science and Information Technology), Davidson College

SOFTWARE

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

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