

Emily Wall, Ph.D.

My research involves decision making using data visualizations and visual analytics. I develop computational strategies to characterize human limitations in decision making (e.g., cognitive bias) and design interventions to promote reflective data analysis and decision making processes. I am an Assistant Professor in the Computer Science Department at Emory University. I completed my Ph.D. in Computer Science at Georgia Tech in 2020 and was a postdoctoral researcher at Northwestern University 2020-2021.

Updated 08/25/22



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Google Scholar



LinkedIn



Math & Science
Center W302E



emilywall.github.io



PDF of CV

Appointments

- 2021- **Assistant Professor**
[Department of Computer Science](#)
[Emory University](#)
- 2020-
2021 **Postdoctoral Researcher**
[Department of Computer Science](#)
[Northwestern University](#)

Education

- 2020 **Ph.D. in Computer Science**
[Georgia Institute of Technology](#)
Thesis: Detecting and Mitigating Human Bias in Visual Analytics
Committee: [Alex Endert](#), [John Stasko](#), [Polo Chau](#), [Brian Fisher](#),
[Wenwen Dou](#)
- 2015 **B.S. in Computer Science & Mathematics**
[University of Georgia](#)
summa cum laude
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Honors & Awards

- 2020 [VGTC Best Dissertation](#), Honorable Mention
- 2019 [GVU Foley Scholar](#), Recipient, Georgia Institute of Technology
- 2019 [D.E. Shaw Exploration Fellowship](#), Recipient
- 2019-2020 [Siemens FutureMaker Fellowship](#), Recipient
- 2018 [GVU Foley Scholar](#), Finalist, Georgia Institute of Technology
- 2017 [Graduate Student Symposium](#), Participant, AT&T Labs
- 2017 [Doctoral Colloquium](#), Participant, IEEE VIS
- 2017-2020 [Graduate Fellowship for STEM Diversity \(GFSD\)](#), Recipient
- 2017 [NSF Graduate Research Fellowship Program](#), Honorable Mention
- 2017 [Department of Defense SMART Fellowship](#), Recipient (Declined)
- 2015-2019 [President's Fellowship](#), Recipient, Georgia Institute of Technology
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Publications

Journal Articles

VisHiker's Guide to Evaluation: Competing Considerations in Study Design

E. Wall, C. Xiong, and Y-S. Kim

IEEE Computer Graphics and Applications, 2022.

[PDF](#)

VIBE: A Design Space for Visual Belief Elicitation in Data Journalism

S. Mahajan, B. Chen, A. Karduni, Y-S. Kim, and E. Wall

Computer Graphics Forum (Proc. EuroVis'22), 2022.

[PDF](#) | [Slides](#)

Left, Right, and Gender: Exploring Interaction Traces to Mitigate Human Biases

E. Wall, A. Narechania, A. Coscia, J. Paden, and A. Endert

IEEE Transactions on Visualization and Computer Graphics (Proc. VIS'21), 2021.

[PDF](#) | [Talk](#) | [Video](#) | [Video FF](#)

Lumos: Increasing Awareness of Analytic Behavior during Visual Data Analysis

A. Narechania, A. Coscia, E. Wall, and A. Endert

IEEE Transactions on Visualization and Computer Graphics (Proc. VIS'21), 2021.

[PDF](#) | [System & Code](#) | [Talk](#) | [Video](#) | [Video FF](#)

VitaLITy: Promoting Serendipitous Discovery of Academic Literature with Transformers & Visual Analytics

A. Narechania, A. Karduni, R. Wesslen, and E. Wall

IEEE Transactions on Visualization and Computer Graphics (Proc. VIS'21), 2021.

[PDF](#) | [System & Code](#) | [Talk](#) | [Video](#) | [Video FF](#)

A Heuristic Approach to Value-Driven Evaluation of Visualizations

E. Wall, M. Agnihotri, L. Matzen, K. Divis, M. Haass, A. Endert, and J. Stasko

IEEE Transactions on Visualization and Computer Graphics (Proc. InfoVis'18), 2019.

[PDF](#) | [Talk](#) | [Website](#) | [Video FF](#)

Podium: Ranking Data Using Mixed-Initiative Visual Analytics

E. Wall, S. Das, R. Chawla, B. Kalidindi, E. Brown, and A. Endert

IEEE Transactions on Visualization and Computer Graphics (Proc. VAST'17), 2018.

[PDF](#) | [Talk](#) | [Video](#) | [Video FF](#) | [Demo](#)

AxiSketcher: Interactive Nonlinear Axis Mapping of Visualizations through User Drawings

B.C. Kwon, H. Kim, E. Wall, J. Choo, H. Park, and A. Endert

IEEE Transactions on Visualization and Computer Graphics (Proc. VAST'16), 2017.

[PDF](#) | [Video](#)

Conference Proceedings

Toward a Design Space for Mitigating Cognitive Bias in Vis

E. Wall, J. Stasko, and A. Endert

IEEE Information Visualization (VIS) Short Papers, 2019.

[PDF](#) | [Supplemental](#) | [Talk](#) | [Video FF](#)

A Markov Model of Users' Interactive Behavior in Scatterplots

E. Wall, A. Arcalgud, K. Gupta, and A. Jo

IEEE Information Visualization (VIS) Short Papers, 2019.

[PDF](#) | [Talk](#) | [Video FF](#)

A Formative Study of Interactive Bias Metrics in Visual Analytics Using Anchoring Bias

E. Wall, L. Blaha, C. Paul, and A. Endert

Proceedings of the 17th IFIP TC 13 International Conference on Human-Computer Interaction (INTERACT'19), 2019.

[PDF](#) | [Video](#)

Using Expert Patterns in Assisted Interactive Machine Learning: A Study in Machine Teaching

E. Wall, S. Ghorashi, and G. Ramos

Proceedings of the 17th IFIP TC 13 International Conference on Human-Computer Interaction (INTERACT'19), 2019.

[PDF](#) | [Video](#)

Warning, Bias May Occur: A Proposed Approach to Detecting Cognitive Bias in Interactive Visual Analytics

E. Wall, L. Blaha, L. Franklin, and A. Endert

IEEE Visual Analytics Science and Technology (VAST), 2017.

[PDF](#) | [Talk](#) | [Video](#) | [Video FF](#)

Supporting Team-First Visual Analytics through Group Activity Representations

S.K. Badam, Z. Zeng, E. Wall, A. Endert, and N. Elmqvist

Graphics Interface, 2017.

[PDF](#) | [Video](#)

Workshop Papers

COVID-19 Health Equity Dashboard - Addressing Vulnerable Populations

S. Liu, E. Wall, S. Patel, and Y. Park

Visualization for Communication (VisComm, at VIS'20), 2020.

[PDF](#)

Four Perspectives on Human Bias in Visual Analytics

E. Wall, L. Blaha, C. Paul, K. Cook, and A. Endert

DECISive: Workshop on Dealing with Cognitive Biases in Visualizations (at InfoVis'17), 2017.

[PDF](#)

Book Chapters

Four Perspectives on Human Bias in Visual Analytics

E. Wall, L. Blaha, C. Paul, K. Cook, and A. Endert

Cognitive Biases in Visualizations, Ed. G. Ellis, Springer, 2018, Chapter 3,

Theses

Detecting and Mitigating Human Bias in Visual Analytics

Emily Wall

Georgia Tech, School of Interactive Computing Ph.D. Thesis. April 2020.



Grants & Funding

2022-
2023 **A Novel Web-based Decision Aid Tool for Reducing COVID-19
Vaccine Hesitancy**

[HealthCare Innovation Seed Grant](#)

Co-PIs: [Dr. Ambar Kulshreshtha](#), [Dr. Shivani Patel](#), [Dr. Piyush Kumar](#)

Funded: \$24,995

2019-
2020 **Toward Mitigating Cognitive Bias for Data-Driven Decision
Making with Visual Analytics**

[Siemens FutureMaker Fellowship](#)

Co-PIs: [Dr. Alex Endert](#)

Funded: \$101,435

2019 **Detecting and Mitigating Human Bias in Visual Analytics**

[GVU Foley Scholar](#)

Co-PIs: [Dr. Alex Endert](#)

Funded: \$5,000

2017-
2020 **Toward Mitigating Cognitive Bias for Data-Driven Decision-
Making With Visual Analytics**

[Graduate Fellowship for STEM Diversity \(GFSD\)](#)

Co-PIs: [Dr. Alex Endert](#)

Funded: \$20,000 / year for 3 years

2014 **Predicting Solar Radiation in Georgia**

[CURO Research Assistantship](#)

Co-PIs: [Dr. Don Potter](#)

Funded: \$1,000

Teaching

Instructor

Fall **Information Visualization (CS 485 / 584)** (40 students)

2022	Emory University
Spring 2022	Human-Computer Interaction (CS 485 / 584) (40 students) Emory University
Fall 2021	Information Visualization (CS 485 / 584) (26 students) Emory University

Guest Lecturer

Oct 2021	Visual Analytics Data Visualization (CompSci 765), University of Wisconsin
Feb 2019	Introduction to Javascript Introduction to Information Visualization (CS 4460), Georgia Institute of Technology
Dec 2017	Cognition in Visualization Information Visualization (CS 7450), Georgia Institute of Technology
Nov 2017	Visual Analytics Information Visualization (CS 7450), Georgia Institute of Technology
Jun 2017	Visualization Design: Do's and Don'ts Introduction to Information Visualization (CS 4460), Georgia Institute of Technology

Presentations

Invited Talks

Bias in Visualization: Considering Equity through Research

> *November 2021*. Object Perception, visual Attention, and visual Memory (OPAM) conference. [📺 Watch](#)

As We Are: Detecting and Mitigating Human Bias in Visual Analytics

> *April 2021*. University of Utah, Data Science Seminar. Virtual Seminar.

> *October 2020*. Pacific Northwest National Laboratory. Virtual Brown Bag.

> *September 2020*. Emory University. Atlanta, GA. [📺 Abstract](#)

> *May 2020*. CMU & AFRL, Center for Excellence on Human-Machine Teaming. Virtual Brown Bag.

> *May 2020*. Siemens. Virtual Brown Bag.

> *March 2020*. Cornell University, Info Science Colloquium. Ithaca, NY.

[📺 Abstract](#)

> *February 2020*. University of Washington, Allen School Colloquium.

Seattle, WA. [📺 Watch](#)

> *February 2020*. Emory University. Atlanta, GA. [📺 Abstract](#)

> *February 2020*. New York University. New York, NY. [Abstract](#)

> *February 2020*. University of Wisconsin. Madison, WI.

Left, Right, and Gender: Mitigating Implicit Human Bias in Visual Analytics

> *January 2020*. Georgia Institute of Technology, GVU Brown Bag. Atlanta, GA. [Watch](#)

The Interactive Analytics Library: Treating Interaction as Data

> *May 2017*. Pacific Northwest National Laboratory. Richland, WA.

Posters and Demonstrations

Warning, Bias May Occur: Detecting and Mitigating Cognitive Bias in Visual Analytics (Poster & Demo)

> *October 2019*. Georgia Institute of Technology, GVU Demo Showcase. Atlanta, GA.

> *June 2019*. Summer Institute on Bounded Rationality. Berlin, Germany.

> *April 2019*. Georgia Institute of Technology, GVU Demo Showcase. Atlanta, GA.

Warning, Bias May Occur: A Proposed Approach to Detecting Cognitive Bias in Interactive Visual Analytics (Demo)

> *April 2018*. CRA-W Grad Cohort. San Francisco, CA.

> *April 2018*. Georgia Institute of Technology, GVU Demo Showcase. Atlanta, GA.

> *April 2017*. Georgia Institute of Technology, GVU Demo Showcase. Atlanta, GA.

Podium: Ranking Data Using Mixed-Initiative Visual Analytics (Poster & Demo)

> *April 2018*. Georgia Institute of Technology, GVU Demo Showcase. Atlanta, GA.

> *April 2017*. Georgia Institute of Technology, GVU Demo Showcase. Atlanta, GA.

> *April 2018*. CRA-W Grad Cohort. San Diego, CA.

> *April 2016*. Georgia Institute of Technology, GVU Demo Showcase. Atlanta, GA.

Students

Advisees

2019- **Yanan Da**
Ph.D. Computer Science and Informatics, Emory University

2019- **Ziwei Dong**
Ph.D. Computer Science and Informatics, Emory University

- 2019- **Shrey Gupta** (co-advised w/ [Avani Wildani](#))
Ph.D. Computer Science and Informatics, Emory University
- 2021- **Shiyao Li**
Ph.D. Computer Science and Informatics, Emory University
- 2022- **Mengyu (Bonnie) Chen**
Ph.D. Computer Science and Informatics, Emory University
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Thesis Committee

- 2022 **Christina Chance**
Thesis: Accuracy of African American Vernacular English for Closed Captioning on Zoom
B.S. Honors Computer Science, Emory University (now: Ph.D. student, UCLA)
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Mentoring

- 2022- **Zhongzheng Xu**, B.S. Computer Science, Emory University, Class of 2023
HCI
- 2021- **Timi Omotoso**, Kennesaw Mountain High School, Class of 2023
Visualization of ML fairness
- 2021- **Randy Truong**, B.S. Computer Science and Quantitative Sciences, Emory University, Class of 2023
Eliciting affective response using visualization and sonification
- 2021- **Zhou (Serena) Fang**, B.S. Quantitative Sciences, Emory University, Class of 2022 (*now: M.S. Biomedical Informatics, Harvard*)
2022 Incorporating topic modeling in a visual analytic system for conducting literature reviews
- 2021- **Yiping (Jessie) Liang**, B.S. Computer Science and Applied Math, Emory University, Class of 2022
2022 Conducting user study and evaluation for assessing impact of data representation on confirmation bias
- 2020- **Jenni Hutson**, B.A. Computer Science and Radio/TV/Film, Northwestern University, Class of 2021
2021 Developed system for visualization recommendations that support decision making
- 2020 **Star Liu**, B.S. Quantitative Sciences, Emory University, Class of 2021
Developed system for [visualizing health inequities](#) during the COVID-19 pandemic, first author of case study on [COVID-19 Health Equity Dashboard](#)
Now: MS Health Sciences Informatics Student at Johns Hopkins

- 2020 **Jamal Paden**, B.S. Computer Science, Georgia Institute of Technology, Class of 2020
Conducted usability testing for bias mitigation interventions, coauthor of [Left, Right, and Gender](#)
- 2017-2018 **Yingxiao Ouyang**, M.S. HCI, Georgia Institute of Technology, Class of 2019
Conducted usability testing and prototyping for bias mitigation interventions
Now: UX Designer at Walmart Labs
- 2017 **Qiaochu Mu**, M.S. HCI, Georgia Institute of Technology, Class of 2018
Conducted usability testing and prototyping for bias mitigation interventions
Now: UX Designer at Alibaba Group
- 2016-2017 **Bharath Kalidindi**, B.S. Computer Science, Georgia Institute of Technology, Class of 2018
Developed system for ranking data from user interaction, coauthored publication of [Podium](#)
Now: Software Engineer at Yahoo
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Service

Professional Service

- 2021-2022 **Organizing Committee**
Elections Chair, [VIS 2021](#) and [VIS 2022](#)
- > **Program Committee Member**
BELIV Workshop on "Designing and Evaluating Visualizations for an Ethical, Inclusive, and Responsible Future", 2022
IEEE VIS, 2021-2022
EuroVis, 2022
ACM CHI, 2022
Vis4Good Workshop at IEEE VIS, 2021
IEEE VIS Short Papers, 2020
VISxAI Workshop at IEEE VIS, 2019
CHI Late Breaking Work, 2018
- > **Organizer**
[Visualization for Social Good Workshop at IEEE VIS 2022](#)
[TRust and EXpertise in Visual Analytics \(TRES\) Workshop at IEEE VIS 2021](#)
[TRust and EXpertise in Visual Analytics \(TRES\) Workshop at IEEE VIS 2020](#)
- 2021 **Panelist**
Equity in Vision Science at [Object Perception, visual Attention, and visual Memory \(OPAM\) conference](#)

- 2017 **Panelist**
Advancing Visualization Inclusion and Diversity (AVID)
Workshop at IEEE VIS
- > **Reviewer**
National Science Foundation: 2021
IEEE VIS: 2017-2022
CHI: 2018-2022
TVCG: 2018-2022
EuroVis: 2020-2022
ACM TiiS: 2022
Cognitive Research: 2022
CG&A: 2021
CSCW: 2021
International Journal of Human-Computer Studies: 2019
KDD IDEA: 2017
VAST Challenge: 2016
- > **Session Chair**
Guidelines and Accessibility @ EuroVIS 2022
Interaction and Animation @ IEEE VIS 2020
- > **Other Committees**
VISxAI Best Paper Award Selection Committee: 2021
CHI Best Paper Award Selection Committee: 2022
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Institutional Service

- > **Panelist**
DEI Statement Panel, Emory University, 2021
Innovations in Online Teaching Panel, Emory University,
2021
- 2020-
2021 **Faculty Search Committee**
Computer Science Department, Emory University
- 2020-
2022 **Graduate Admissions Committee**
Computer Science Department, Emory University
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Selected Media

- Nov
2019 **A Reflection on VIS2019: Or, How Doomed Are We?**
Medium Blog Post, Multiple Views on Visualization Research
Explained. [Read](#)
by Michael Correll
- Nov
2019 **Highlights from IEEE VIS 2019**, Uncharted Software Blog. [Read](#)
by Rosa Romero-Gómez

Other Professional Activities

- Aug
2022 [Emory CFDE Summer Teaching Intensive](#)
Emory University
- Jun
2022 [Visualization Summer Camp](#)
Atlantic City, NJ
- Fall
2021 [Emory CFDE Grantseekers' Institute](#)
Emory University
- Oct
2021,
June
2020 [Emory College Online Teaching Strategies \(ECOTS\)](#)
Emory University
- Aug
2021 [Visualization Summer Camp](#)
Minneapolis, MN
- Oct
2019 [NextProf Nexus Workshop](#)
Atlanta, GA
- Jun
2019 [Summer Institute on Bounded Rationality](#)
Berlin, Germany
- Apr
2018 [CRA-W Grad Cohort Workshop](#)
San Francisco, CA
- Oct
2016 [Grace Hopper Celebration of Women in Computing](#)
Houston, TX
- Apr
2016 [CRA-W Grad Cohort Workshop](#)
San Diego, CA
-