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.

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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

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

Publications

Journal Articles

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 | 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 | 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, pp. 29-42.
Book | Chapter

Theses

Detecting and Mitigating Human Bias in Visual Analytics
Emily Wall
Georgia Tech, School of Interactive Computing Ph.D. Thesis. April 2020.
PDF

Teaching

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

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.

Students

Advisees

2019-	**Yanan Da** Ph.D. Computer Science and Informatics, Emory University
2019-	**Ziwei Dong** Ph.D. Computer Science and Informatics, Emory University
2021-	**Shiyao Li** Ph.D. Computer Science and Informatics, Emory University

Service

Professional Service

2021-2022

Organizing Committee
Elections Chair, VIS 2021 and VIS 2022

> **Program Committee Member**
EuroVis, 2022
ACM CHI, 2022
IEEE VIS, 2021
Vis4Good Workshop at IEEE VIS, 2021
IEEE VIS Short Papers, 2020
VISxAI Workshop at IEEE VIS, 2019
CHI Late Breaking Work, 2018

2020-2021 **Organizer**
TRust and EXpertise in Visual Analytics (TREX) Workshop at IEEE VIS 2021
TRust and EXpertise in Visual Analytics (TREX) Workshop at IEEE VIS 2020

> **Panelist**
2021: Equity in Vision Science at Object Perception, visual Attention, and visual Memory (OPAM) conference
2017: Advancing Visualization Inclusion and Diversity (AVID) Workshop at IEEE VIS

> **Reviewer**
National Science Foundation: 2021
IEEE VIS: 2017-2021
CHI: 2018-2022
TVCG: 2018-2021
EuroVis: 2020-2022
CG&A: 2021
CSCW: 2021
International Journal of Human-Computer Studies: 2019
KDD IDEA: 2017
VAST Challenge: 2016

> **Other Committees**
VISxAI Best Paper Award Selection Committee: 2021

Institutional Service

2020-2021 **Faculty Search Committee**
Computer Science Department, Emory University

2020-2021 **Graduate Admissions Committee**
Computer Science Department, Emory University

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

May 2019 **Battling Bias**. Ep. 3, Tech Unbound Podcast. Listen
with Josh Preston