

Emily Wall

My research involves decision making using data visualization 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 will be joining the Department of Computer Science at Emory University as an Assistant Professor in Fall 2021. I am currently completing a Postdoc at Northwestern University with Jessica Hullman and Steve Franconeri (Summer 2020 - Summer 2021). I completed my Ph.D. in Computer Science at Georgia Tech in 2020.

✉ emily.wall@emory.edu

🎓 [Google Scholar](#)

🌐 emilywall.github.io

🌐 [LinkedIn](#)

🐦 [@embwall](#)

📄 [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

Honors & Awards

2019 [GVU Foley Scholar](#), Recipient, Georgia Institute of Technology

2019 [D.E. Shaw Exploration Fellowship](#), Recipient

2019 [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	<u>Graduate Fellowship for STEM Diversity (GFSD)</u> , Recipient
2017	<u>NSF Graduate Research Fellowship Program</u> , Honorable Mention
2017	<u>Department of Defense SMART Fellowship</u> , Recipient (Declined)
2015-2019	<u>President's Fellowship</u> , Recipient, Georgia Institute of Technology
2015	<u>CURO Symposium Best Paper Award</u> , University of Georgia
2014	<u>CURO Research Assistantship</u> , University of Georgia
2014	<u>Hahn Family Scholarship for Computer Science</u> , Recipient, University of Georgia
2013	<u>Hollingsworth Award for Excellence in Mathematics</u> , Recipient, University of Georgia
2012-2015	<u>Zell Miller Scholarship</u> , Recipient, University of Georgia

Publications

Journal Articles

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.

[!\[\]\(339a16584d5da0f0a3ca4e9ec17bf6a1_img.jpg\) PDF](#) | [!\[\]\(e06a1d39938b2f5d7a2c3618fea4f77f_img.jpg\) Talk](#) | [!\[\]\(23ac9e28f2600a1e787d149d7f76716a_img.jpg\) Website](#) | [!\[\]\(ba1ec627dd10668218bdb3f2bf103f06_img.jpg\) 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.

[!\[\]\(3211b5d1d968fc1665909b34f9f16010_img.jpg\) PDF](#) | [!\[\]\(d47ad152ec3d86a04ad64c8049e1f17f_img.jpg\) Talk](#) | [!\[\]\(6b7fbb0b7bdb78cadf73d50851a4dfb1_img.jpg\) Video](#) | [!\[\]\(cd0f39e2b8d76d7e84d5eed1ed02b2df_img.jpg\) Video FF](#) | [!\[\]\(11e014e490252374320bfedb9a33c896_img.jpg\) 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.

[!\[\]\(6a9b39b98eb945faa14c645ec99e4eaa_img.jpg\) PDF](#) | [!\[\]\(182077db5bac9ff62bf376fe37ffa951_img.jpg\) 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.

[!\[\]\(f1c5da15572e3e09d343161be98f508d_img.jpg\) PDF](#) | [!\[\]\(2a30f8f4aa91bd6e751eede05a6a74ad_img.jpg\) Supplemental](#) | [!\[\]\(3cb8dd9de164802dfb6b7698e4da59f4_img.jpg\) Talk](#) | [!\[\]\(774a69b516cf49fa0a68dfd0afbbc1c4_img.jpg\) 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.

[!\[\]\(83bbbd261710c59db0214aa27b2edc0d_img.jpg\) PDF](#) | [!\[\]\(d6bd620f45f20291c3c3dab29f2286e8_img.jpg\) Talk](#) | [!\[\]\(ac4fcea21db844807030be74b3ff0b7a_img.jpg\) 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.

[!\[\]\(a73c1962d20a39dd8fd6a060ae69693f_img.jpg\) PDF](#) | [!\[\]\(97482c065abc51810383a5e621666034_img.jpg\) 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](#)

Professional Experience

2015-2020 [Georgia Institute of Technology](#), Atlanta, GA
Graduate Research Assistant

	Advised by Dr. Alex Endert Thesis: Detecting and Mitigating Human Bias in Visual Analytics
Summer 2016	Pacific Northwest National Laboratory , Richland, WA Intern, Visual Analytics Group Mentored by Lyndsey Franklin and Kris Cook Developed heuristics to characterize bias in real-time from user interaction sequences
2013-2015	Jet Propulsion Laboratory , Pasadena, CA Intern, Systems Engineering Group Advised by Marc Sarrel Used SysML and principles of Model-Based Systems Engineering to visualize network flows for Lockheed Martin's Orion capsule
Fall 2014	University of Georgia , Athens, GA Undergraduate Research Assistant Advised by Dr. Don Potter Developed neural network to predict solar radiation in Georgia; funded by the Georgia Power Advanced Solar Initiative
Fall 2013	University of Georgia , Athens, GA Undergraduate Research Assistant Advised by Dr. Liming Cai Used sequence alignment techniques to determine coevolution of species with a common ancestor
Spring 2013	University of Georgia , Athens, GA Undergraduate Research Assistant Advised by Dr. Prashant Doshi Created simulation and programmable interface for Parrot A.R. Drone quadcopters to serve as a testbed for autonomous decision making with UAVs

Grants & Funding

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

Teaching Assistant

Spring 2019	Introduction to Information Visualization (CS 4460) (133 students) Georgia Institute of Technology
Fall 2017	Information Visualization (CS 7450) (74 students) Georgia Institute of Technology
Fall 2013	Introduction to Computing and Programming (CSCI 1301) University of Georgia
Fall 2012	Introduction to Computing and Programming (CSCI 1301) University of Georgia

Guest Lectures

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

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

- > *September 2020*. Emory University. Atlanta, GA. [!\[\]\(b7e1c8bc060ab2af8bc42ce81bfcf3c4_img.jpg\) 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. [!\[\]\(2d0771195b0e0240efcbd9d75c7cddb8_img.jpg\) Abstract](#)
- > *February 2020*. University of Washington, Allen School Colloquium. Seattle, WA. [!\[\]\(2877759bcf4a3609f6b92cbc19de8848_img.jpg\) Watch](#)
- > *February 2020*. Emory University. Atlanta, GA. [!\[\]\(28f8e7c07e6223706c823723c822f20f_img.jpg\) Abstract](#)
- > *February 2020*. New York University. New York, NY. [!\[\]\(d87d73a74f22e314c531cbe6e8724268_img.jpg\) 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. [!\[\]\(5950fde355bafc747b20583b30242b59_img.jpg\) Watch](#)

The Interactive Analytics Library: Treating Interaction as Data

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

Mentoring

2020	Jamal Paden , B.S. Computer Science, Georgia Institute of Technology, Class of 2020 Conducted usability testing for bias mitigation interventions
2017-2018	Yingxiao Ouyang , M.S. HCI, Georgia Institute of Technology, Class of 2019 Conducted usability testing and prototyping for bias mitigation interventions
2017	Qiaochu Mu , M.S. HCI, Georgia Institute of Technology, Class of 2018 Conducted usability testing and prototyping for bias mitigation interventions
2016-2017	Bharath Kalidindi , B.S. Computer Science, Georgia Institute of Technology, Class of 2018 Developed system for ranking data from user interaction

Service

Professional Service

- > **Program Committee Member**
IEEE VIS Short Papers, 2020
VISxAI Workshop at IEEE VIS, 2019
CHI Late Breaking Work, 2018
- > **Reviewer**
IEEE VIS: 2017-2020
CHI: 2018-2020
TVCG: 2018-2020
EuroVis: 2020
International Journal of Human-Computer Studies: 2019
KDD IDEA: 2017
VAST Challenge: 2016
- 2020 **Organizer**
[Trust and Expertise in Visual Analytics \(TREX\) Workshop at IEEE VIS](#)
- 2017 **Panelist**
Advancing Visualization Inclusion and Diversity (AVID) Workshop at IEEE VIS

Institutional Service

- 2018-2020 **Graduate Student Council Chair**, School of Interactive Computing
Representative of graduate students in the School of Interactive Computing
- 2017-2018 **Graduate Student Council Travel Committee**
Responsible for reviewing and awarding travel grants to graduate student applicants in the College of Computing
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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
- May 2019 **Battling Bias**. Ep. 3, Tech Unbound Podcast. [Listen](#)
with Josh Preston
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Other Professional Activities

- 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
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