

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.

Appointments

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

- 2020 **Ph.D. in Computer Science**

[Georgia Institute of Technology](#)
Advised by [Dr. Alex Endert](#)
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

- 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 [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
- 2015 [CURO Symposium Best Paper Award](#), University of Georgia
- 2014 [CURO Research Assistantship](#), University of Georgia
- 2014 [Hahn Family Scholarship for Computer Science](#), Recipient, University of Georgia
- 2013 [Hollingsworth Award for Excellence in Mathematics](#), Recipient, University of Georgia
- 2012-2015 [Zell Miller Scholarship](#), Recipient, University of Georgia
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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.

[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.

[!\[\]\(1d3a1175dd4902218e694b9c098adb83_img.jpg\) PDF](#) | [!\[\]\(e2297bc882e4a3f95bff068ab9c9101f_img.jpg\) Talk](#) | [!\[\]\(69eafe5577bb2820ded2637faee72eea_img.jpg\) Video](#) | [!\[\]\(63df79f9df20930b0436ff68907f4313_img.jpg\) Video FF](#) | [!\[\]\(206bcee4096a3ee3b0f7e354023a5ee1_img.jpg\) 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.

[!\[\]\(a03a7eb2f4046e1d3c76772003e549ea_img.jpg\) PDF](#) | [!\[\]\(844169987a590ed8c7e31d5d18950e8d_img.jpg\) 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.

[!\[\]\(870f5d5e9c0d57485634be3ecf52f3ca_img.jpg\) PDF](#) | [!\[\]\(66b14d8ba452f6f18b47935355b6120a_img.jpg\) Supplemental](#) | [!\[\]\(bcb9bfd69e5b89da3d817cb72bfcfd1e_img.jpg\) Talk](#) | [!\[\]\(0eb6abbd70294475dc7cb6513507500d_img.jpg\) 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.

[!\[\]\(7d1d6890825e83a6a4a51febe2dcc7f3_img.jpg\) PDF](#) | [!\[\]\(5b78f4d8e2942ab203be44f938cc0a7c_img.jpg\) Talk](#) | [!\[\]\(1f09aec1483927ae51093bfc72ceaa0e_img.jpg\) 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.

[!\[\]\(28f72b996fc97883dfd9d4e8b1b16b4e_img.jpg\) PDF](#) | [!\[\]\(834c7d0594ead3332d583e6d9bd73ce6_img.jpg\) 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.

[!\[\]\(1ed10657a19f9137278430c48fd18626_img.jpg\) PDF](#) | [!\[\]\(4dcc4b4891182a8bcced7bb00d8b5889_img.jpg\) 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.

[!\[\]\(2885535958616e9ec6b97903614c334b_img.jpg\) PDF](#) | [!\[\]\(9617090d30d69647517339fb4821ff48_img.jpg\) Talk](#) | [!\[\]\(559d1ce848565d634b6a83442f2340e6_img.jpg\) Video](#) | [!\[\]\(995894ac014332fa387035c79a674477_img.jpg\) 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

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
- 2020 [IBM Research Laboratory](#), Boulder, CO

- 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
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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

> *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. [!\[\]\(9dfdaff1d86ba3c1f8353b4d1b61b8c5_img.jpg\) Abstract](#)

> *February 2020*. University of Washington, Allen School Colloquium. Seattle, WA. [!\[\]\(83f22ed94ec5517769dd76d702c6bfd8_img.jpg\) Watch](#)

> *February 2020*. Emory University. Atlanta, GA. [!\[\]\(8d0f0e0fe25b320c33272c52aec1fbca_img.jpg\) Abstract](#)

> *February 2020*. New York University. New York, NY. [!\[\]\(642aa997563f9a325b310230bb5078b7_img.jpg\) 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. [!\[\]\(d0262bbe9d2356661a2e89321dfcc781_img.jpg\) 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.

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
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Service

- 2020 **Organizer**
[Trust and Expertise in Visual Analytics \(TREX\) Workshop at IEEE VIS](#)
- Program Committee Member**
IEEE VIS Short Papers, 2020
VISxAI Workshop at IEEE VIS, 2019
CHI Late Breaking Work, 2018
- Reviewer**
IEEE VIS: 2020, 2019, 2018, 2017
CHI: 2020, 2019, 2018
EuroVis: 2020
TVCG: 2018
International Journal of Human-Computer Studies:

- 2019
KDD IDEA: 2017
VAST Challenge: 2016
- 2017 **Panelist**
Advancing Visualization Inclusion and Diversity
(AVID) Workshop at IEEE VIS
- 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
-

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
-

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
