

Danielle Albers Szafir

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Educational Background

- 2009–2015 **Ph.D. in Computer Sciences**
University of Wisconsin-Madison
Minor studies in Perceptual Psychology and Art History
Dissertation: "Utilizing Color for Perceptually-Driven Data Visualization"
Dissertation Committee: Drs. Michael Gleicher, Steven Franconeri, Bilge Mutlu, Robert Roth, & Kevin Ponto
- 2009–2011 **Master of Science in Computer Sciences**
University of Wisconsin-Madison
- 2007–2009 **Bachelor of Science in Computer Science**
University of Washington
NASA Space Grant Scholar & four-time Dean's List Member
Graduated at age 20
Minor in Mathematics

Employment History

- 2015–Present **Assistant Professor & Founding Faculty Member**
Department of Information Science, University of Colorado Boulder
Assistant Professor in the Department of Computer Science *by courtesy*
Assistant Professor in the Center for Research Data & Digital Scholarship *by courtesy*
Fellow in the Institute of Cognitive Science
Fellow in the ATLAS Institute
- 2010–2015 **Research Assistant**
Department of Computer Sciences, University of Wisconsin-Madison
- 2013 **Research Intern**
Tableau Software, Menlo Park, CA
- 2012 **Software Development Intern**
Google, Inc., Madison, WI
- 2009 **Software Development Intern**
Boston Scientific, Redmond, WA
- 2008–2009 **Software Development Intern**
Apptio, Bellevue, WA

Honors & Awards

- 2018 Forbes 30 Under 30 for Science, *Forbes Magazine*
- 2017 Best Paper Award, IEEE VIS Information Visualization
- 2016 Doctoral Dissertation Award Honorable Mention, IEEE VGTC VGP
- 2014 MERL Best Student Paper Award, IS&T 22nd Color and Imaging Conference
- 2014 Best Presentation Award Honorable Mention, McPherson Eye Research Institute
- 2013 Best Poster Award, IEEE VIS Scientific Visualization
- 2010–2012 BACTER Institute Research Fellow
- 2007–2009 NASA Space Grant Scholar
- 2007–2009 Dean's List, University of Washington

Publications

Note that (s) indicates student authors under research advisement at the time of publication. Acceptance rates listed where available. Conferences are a primary publication venue in Computer & Information Sciences. IEEE VIS conference proceedings are published as an issue of *IEEE Transactions on Visualization and Computer Graphics*, and EuroVis conference proceedings are published as an issue of *Computer Graphics Forum*.

Published Works

- Journal Publications A. Sarikaya, M. Gleicher, & **D. Albers Szafir**. "Design Factors for Summary Visualization in Visual Analytics." *Computer Graphics Forum*, 37(3): 145–156, 2018.
> *Special Issue: Proceedings of EuroVis 2018*. Acceptance Rate: 29%
- D. Albers Szafir**. "Modeling Color Difference for Visualization Design." *IEEE Transactions on Visualization and Computer Graphics*, 24(1): 392–401, 2018.
> *Special Issue: Proceedings of IEEE VIS 2017*. Acceptance Rate: 22.9%
> **Best Paper Award (Top paper of 170 submissions)**
- D. Albers Szafir**, D. Stuffer, Y. Sohail^(s), & M. Gleicher. "TextDNA: Visualizing Word Usage Patterns with Configurable Colorfields." *Computer Graphics Forum*, 35(3): 421–430, 2016.
> *Special Issue: Proceedings of EuroVis 2016*. Acceptance Rate: 26%
- D. Albers Szafir**, S. Haroz, M. Gleicher, & S. Franconeri. "Four Types of Ensemble Coding for Data Visualizations." *Journal of Vision*, 16(11): 1–19, 2016.
> *5th highest scoring Journal of Vision paper on Altmetrics*
> *In Visualizing Data's Best of the Visualization Web, May 2017*
- D. Albers Szafir**, A. Sarikaya, & M. Gleicher. "Lightness Constancy in Surface Visualization." *IEEE Transactions on Visualization and Computer Graphics*, 22(9): 2107–2121, 2016.
- A. Sarikaya, **D. Albers**, J. Mitchell, & M. Gleicher. "Visualizing Validation of Protein Surface Classifiers." *Computer Graphics Forum*, 33(3): 171–180, 2014.
> *Special Issue: Proceedings of EuroVis 2014*. Acceptance Rate: 25%
- D. Albers**, C. Dewey, & M. Gleicher. "Sequence Surveyor: Leveraging Overview for Scalable Genomic Alignment Visualization." *IEEE Transactions of Visualization and Computer Graphics*, 17(5): 2392–2401, 2011.
> *Special Issue: Proceedings of IEEE VIS*. Acceptance Rate: 25%
- M. Gleicher, **D. Albers**, R. Walker, I. Jusufi, C. Hansen, & J. Roberts. "Visual Comparison for Information Visualization." *Information Visualization*, 10(4): 289–309, 2011.
- Refereed Conference Papers M. Whitlock^(s), E. Hanner, J. Brubaker, S. Kane, & **D. Albers Szafir**. "Interacting with Distant Objects in Augmented Reality." In the *Proceedings of IEEE Virtual Reality*, 2018 (8 pages).
> Acceptance Rate: 20.6%
- C. Diaz^(s), M. Walker, **D. Albers Szafir**, & D. Szafir. "Designing for Depth Perceptions in Augmented Reality." In the *Proceedings of the International Symposium on Mixed and Augmented Reality (ISMAR)*, 2017 (12 pages).
> Acceptance Rate: 26%
- D. Albers Szafir**, M. Stone, & M. Gleicher. "Adapting Color Difference for Design." In the *Proceedings of the IS&T 22nd Color and Imaging Conference*, pp. 228–233, 2014.
> **MERL Best Student Paper Award**
- M. Stone, **D. Albers Szafir**, & V. Setlur. "An Engineering Model for Color Discriminability as a Function of Size." In the *Proceedings of the IS&T 22nd Color and Imaging Conference*, pp. 253–258, 2014.
> *Integrated into D3 as d3-jnd and Tableau 10*

D. Albers, M. Correll, & M. Gleicher. "Task-Driven Evaluation of Aggregation in Time Series Visualization." In the *Proceedings of the 2014 ACM Annual Conference on Human Factors in Computing Systems (CHI)*, pp. 551–560, 2014.

> Acceptance Rate: 23%

M. Correll, **D. Albers**, S. Franconeri, & M. Gleicher. "Comparing Averages in Time Series Data." In the *Proceedings of the 2012 ACM Annual Conference on Human Factors in Computing Systems (CHI)*, pp. 1095–1104, 2012.

> Acceptance Rate: 23%

Magazine Articles **D. Albers Szafrir**. "The Good, the Bad, and the Biased: Five ways visualizations can mislead (and how to fix them)." *ACM Interactions*, 2018 (to appear).

C. Fiesler, W. Aspray, L. Barker, J. Brubaker, L. Devendorf, B. Keegan, L. Palen, M. Paul, **D. Albers Szafrir**, R. Roque, R. Robinson, A. Volda, & S. Volda. "Information Science at CU Boulder." *Interactions Magazine*. 24(4), pp. 18-20, 2017.

Refereed Workshops & Colloquia A. Daughton, D. Pruss^(s), B. Arnot^(s), **D. Albers Szafrir** & M. Paul. "Characteristics of Behavior Discourse among Twitter Users Discussing Zika." 2nd *Social Media Mining for Health Applications Workshop & Shared Task at the 2017 American Medical Informatics Association Annual Symposium*, pp. 27–31, 2017.

D. Albers Szafrir & D. Szafrir. "Cognitive Load in Visualization: Myths and Misconceptions." *Creation, Curation, Critique and Conditioning of Principles and Guidelines in Visualization (C4PGV)*. 2016 (1 page).

D. Albers Szafrir. "Considering Connectivity for Visualization Design." *Human-Computer Interaction Consortium Conference (HCIC)*, 2016 (3 pages).

M. Correll, E. Alexander, **D. Albers Szafrir**, A. Sarikaya, & M. Gleicher. "Navigating Reductionism and Holism in Evaluation." *BELIV '14: Beyond Time and Errors—Novel Evaluation Methods for Visualization*, pp. 23–26, 2014.

D. Albers. "Perceptually Informed Scalable Sequence Comparison." *IEEE VIS Doctoral Colloquium*, 2013 (4 pages).

Other Workshops **D. Albers Szafrir** & C. Fiesler. "A Crash-Course in P5." *NCWIT Aspirations in Computing Colorado Affiliate*. 2017.

> Hands-on workshop for 72 high school women

E. Alexander & **D. Albers Szafrir**. "D3.js: Javascript for Data Visualization." *Second Annual Digital Humanities+Art Symposium: Going Public*. 2015.

D. Albers Szafrir. "Thinking with Data." *Digital Humanities Research Network*, 2014.

D. Albers & Michael Gleicher. "Seeing Double: Crowdsourced Models of Color Discrimination." *Mid-graph: Midwest Graphics Workshop*, 2012.

Refereed Abstracts A. Kelly, M. Whitlock^(s), B. Nickoloff, A. Lam, **D. Albers Szafrir**, & S. Volda. "Becoming Butterflies: Interactive Embodiment of the Butterfly Lifecycle." In the *UbiComp Poster Proceedings*, pp. 93–96, 2017.

D. Pruss^(s), A. Daughton, B. Arnot^(s), **D. Albers Szafrir**, & M. Paul "Content Analysis of Zika Related Tweets." *American Public Health Association Annual Conference*. 2017 (1 page).

D. Albers Szafrir. "The Effects of Size and Shape on Color Perception." *Vision Science Society Annual Meeting*, 2017 (1 page).

D. Albers Szafrir & M. Gleicher. "Visualization-Aware Color Design." In the *EuroVis Poster Proceedings*, pp. 97–99, 2016.

D. Albers, M. Correll, M. Gleicher, & S. Franconeri. "Ensemble Processing of Color and Shape: Beyond Mean Judgments." *Journal of Vision*, 14(9): 1056, 2014.

D. Albers, A. Sarikaya, & M. Gleicher. "Lightness Constancy in Surface Visualization." *Poster Abstracts of IEEE VIS*, 2013 (2 pages).

> [Best Poster Award, Scientific Visualization Track](#)

A. Sarikaya, **D. Albers**, & M. Gleicher. "Understanding Performance of Protein Structural Classifiers." *Poster Abstracts of IEEE VIS*, 2013 (2 pages).

D. Albers, C. Dewey, & M. Gleicher. "Sequence Surveyor: Leveraging Overview for Large-Scale Genomic Alignment Visualization." In the *Proceedings of VizBi 2011: Visualizing Biological Data*, 2011 (1 page).

D. Albers & M. Gleicher. "Poster: Perceptual Principles for Scalable Sequence Alignment Visualization." In the *2010 IEEE Information Visualization Poster Proceedings*, 2010 (2 pages).

D. Albers & M. Gleicher. "Perceptual Principles for Scalable Sequence Alignment Visualization." In the *Proceedings of the 7th Symposium on Applied Perception in Graphics and Visualization*, pp. 164 2010.

Panel & Symposium Organization C. Nothelfer, Z. Bylinskii, M. Elliott, C. Xiong, & **D. Albers Szafrir**. "Vision Science Meets Visualization." Panel at *IEEE VIS*. Phoenix, AZ, 2017.

C. Nothelfer, Z. Bylinskii, M. Elliott, C. Xiong, & **D. Albers Szafrir**. "Vision and Visualization: Inspiring Novel Research Directions in Vision Science." Symposium at *Vision Sciences Society Annual Meeting*. St. Pete's Beach, FL, 2018.

Dissertation **D. Albers Szafrir**. "Utilizing Color for Perceptually-Driven Data Visualization." *University of Wisconsin-Madison*, 2015.

> [Honorable Mention, IEEE Visualization & Graphics Pioneers Best Dissertation Award](#)

Works In-Progress

Conditionally Accepted H. Song^(s) & **D. Albers Szafrir**. "Where's My Data? Visualizing Missing Values in Time Series Data." *IEEE Transactions of Visualization and Computer Graphics*, 2019. In the Proceedings of IEEE VIS 2018.

> Acceptance Rate: 25.7%

Under Review D. Pruss^(s), Y. Fujinuma, M. Paul, A. Daughton, B. Arnot^(s), **D. Albers Szafrir**, & J. Boyd-Graber. "Zika discourse in the Americas: a multilingual topic analysis of Twitter." *PLOS ONE*, 2019.

J. Muesing^(s), L. Burks^(s), M. Iuzzolino^(s), J. Hatlelid, **D. Albers Szafrir**, & N. Ahmed. "Fully Bayesian Human-Machine Data Fusion for Robust Dynamic Target Surveillance and Characterization." *AIAA InfoTech @ Aerospace Conference*, 2019.

In Revision M. Iuzzolino^(s), T. Umada^(s), N. Ahmed & **D. Albers Szafrir**. "In Automation We Trust: Investigating the Role of Uncertainty in Active Learning Systems." *Proceedings of the 2019 Conference on Human Factors in Computing Systems*, 2019.

M. Whitlock^(s), K. Wu^(s), & **D. Albers Szafrir**. "FieldView: Immersive Visualization and Data Fusion for Situated Analysis in the Field." *ACM User Interface Software and Technology Symposium*, 2018.

In Preparation S. Smart^(s) & **D. Albers Szafrir**. "Measuring the Separability of Shape, Size & Color in Scatterplots." *Proceedings of the 2019 Conference on Human Factors in Computing Systems*, 2019.

D. Albers Szafrir. *Towards a Science of Color for Visualization*, Morgan & Claypool Synthesis Lectures on Visualization, 2019.

S. Naidu^(s) & **D. Albers Szafrir**. "Optimizing Highlight Colors in Data Visualization." *Proceedings of the 2019 Conference on Human Factors in Computing Systems*, 2019.

M. Whitlock^(s), J. Mitchell^(s), B. Wilson^(s), B. Arnot^(s), B. Chung^(s), R. Craig^(s), N. Pfeufer^(s) & **D. Albers Szafrir**. "MR-CAT: An In-situ Prototyping System for Mixed Reality Applications" *UbiComp*, 2019.

S. Smart^(s), K. Wu^(s), & **D. Albers Szafir**. "A Data-Driven System for Perceptual Color Encoding Design." *IEEE VIS*, 2019.

Talks

- Invited Talks & Panels
- Panelist. "Visualization for Pan- and Meta-genomics" *Visualization of Biological Data: Crossroads*, Schloss Dagstuhl Seminar Series, Wardern, Germany, 2018.
- "Color Perception in Data Visualizations" *Vision and Visualization: Inspiring novel research directions in vision science*, Vision Sciences Society Annual Meeting, St. Pete's Beach, FL, 2018.
- Panelist. "Visualization and Perception Across Scales" *Learning from the Science of Cognition and Perception*, National Academy of Sciences, Washington, D.C., 2018.
- "Scaling up Visualization through Visual Cognition" *University of Denver*, Denver, CO, 2017.
- Panelist, "Visualization and HPC." *Rocky Mountain High Performance Computing Conference*, Boulder, CO, 2017.
- Panelist, "Assistant Professors Panel." *CRA New Computing Faculty Workshop*, San Diego, CA, 2017.
- "Facilitating a Dialogue between People & Data: Lessons in Designing for Big Data." *Rocky Mountain Special Libraries Association Mini-Conference*, Denver, CO, 2017.
- "How do we see data? Ensembles, Constancy, & Colors." *Information Visualization Meet-Up, Vision Science Society Annual Meeting*, St. Pete's Beach, FL, 2017.
- "Enabling a Dialogue between People & Data: Lessons in Designing for Big Data." *Big Data Bootcamp*, Denver, Colorado, 2016.
- "Perceptually-Driven Visualization of Complex Data." *Rochester Institute of Technology*, Rochester, New York, 2015.
- "Perceptually-Driven Visualization of Complex Data." *Digital Arts Colloquium*, University of Iowa, Iowa City, Iowa, 2015.
- "Perceptually-Driven Visualization of Complex Data." *Data @ ASU*, Arizona State University, Tempe, Arizona, 2015.
- "Perceptually-Driven Visualization of Complex Data." *Information Science Seminar*, University of Colorado Boulder, Boulder, Colorado, 2015.
- "Color & Size." *Developer's Seminar*, Tableau Software, Palo Alto, CA.
- "Informing Visualization in the Humanities through Perception and Genomics." *Genres of Scholarly Knowledge Production*, Umeå University, Umeå, Sweden, 2014.
- Intramural Talks
- "Visualizing Biological Data." *Bioinformatics & Data Science Supergroup*, University of Colorado Boulder, 2018.
- "Scaling Up Visualization through Visual Cognition." *BioFrontiers Seminar*, University of Colorado Boulder, 2018.
- "Scaling Up Visualization through Visual Cognition." *Applied Math Seminar*, University of Colorado Boulder, 2017.
- "Scaling Up Visualization through Visual Cognition." *Leeds Business Analytics Meet-Up*, University of Colorado Boulder, 2017.
- "DH+Data: How the Digital Humanities shape and are shaped by Data Science." *Official Launch of the Center for Research Data and Digital Scholarship*, University of Colorado Boulder, 2017.
- "Information Visualization: Designing with Data." *CU-Boulder Data Science Team*, University of Colorado Boulder, 2017.

"Perceptually-Driven Information Visualization." *Institute of Cognitive Science Seminar*, University of Colorado Boulder, 2015.

"An Introduction to Data Visualization." *Science Learner's Lunch*, University of Colorado Boulder, 2015.

"Perceptually-Driven Information Visualization." *CU Libraries Research Seminar*, University of Colorado Boulder, 2015.

"Perceptually-Driven Information Visualization." *Human-Centered Computing Seminar*, University of Colorado Boulder, 2015.

"Insights at a Glance: Visualization at UW-Madison." *MERI at a Glance*, McPherson Eye Research Institute, Madison, Wisconsin, 2014.

Press Coverage

"A Snapshot of Current Trends in Visualization." *IEEE Computing Now*, 2018.

"30-Under-30: Science." *Forbes Magazine*, 2017.

"Why Visuals are the Most Important Thing in Brand Storytelling." *Native Advertising Institute*, 2017.

"Grand Challenge expanded and enhanced by new projects." *CU Boulder Today*, 2016.

Funding

Total Funded (including Recommended): \$2,876,934 (Szafrir Portion: \$1,028,152).

Funded & Recommended Proposals

Funded Grants Collaborative Analyst-Machine Perception for Robust Data Fusion

Amount: \$353,936 (Szafrir Portion: \$128,102)

Agency: Air Force SMC-RSX

Role: Co-Principal Investigator (Principal Investigator: N. Ahmed, CU Boulder)

Duration: 06.2017–06.2018

CRII: CHS: Data-Driven Automation of Color Encodings for Data Visualization

Amount: \$174,925 (Szafrir Portion: \$174,925)

Agency: National Science Foundation

Role: Principal Investigator

Duration: 09.2017–08.2020

Computing support for Digital Humanities at CU

Amount: \$46,009

Agency: University of Colorado Boulder Innovative Seed Grant

Role: Co-Principal Investigator (Principal Investigator: V. Hulden, CU Boulder)

Duration: 06.2017–05.2018

FieldView: Using Mobile Devices to Blend Data Collection and Analysis for Field Research

Amount: \$30,000 (Szafrir Portion: \$30,000)

Agency: University of Colorado Boulder Innovative Seed Grant

Role: Principal Investigator (Co-Principal Investigator: Daniel Szafrir, ATLAS Institute, CU Boulder)

Duration: 07.2016–12.2017

Digital Humanities Research Network

Amount: \$7,500

Agency: Andrew W. Mellon Workshop Grant

Role: Coordinator (Lead Coordinators: Molly Wright Steenson, Journalism, UW-Madison & Catherine DeRose, English, UW-Madison)

Duration: 09.2014–08.2015

Recommended For Funding	CHS: Medium: Scaling Qualitative Inductive Analysis through Computational Methods Amount: \$1,070,508 (Szafor Portion: \$297,674) Agency: National Science Foundation Role: Principal Investigator (Co-Principal Investigators: Jed Brubaker, CU Boulder; Casey Fiesler, CU Boulder; Michael Paul, CU Boulder) Duration: 09.2018–08.2021
	CHS: Medium: Data-Mediated Communication with Proximal Robots for Emergency Response Amount: \$1,194,056 (Szafor Portion: \$397,451) Agency: National Science Foundation Role: Co-Principal Investigator (Principal Investigator: Daniel Szafor, CU Boulder; C. Heckmann, CU Boulder) Duration: 09.2018–08.2021
Corporate Gifts	Information Visualization Hackathon Sponsorship Amount: \$10,000 (Szafor Portion: \$10,000) Organization: Zayo Group Date Received: 01.2017
Fellowships & Travel Grants	Schloss-Dagstuhl NSF Support Grant Sponsor: National Science Foundation Date Received: 10.2017
	IEEE VIS Doctoral Colloquium Travel Fellowship Sponsor: IEEE VIS Date Received: 10.2013
	BACTER Research Fellowship Sponsor: Department of Energy & the BACTER Institute Duration: 06.2010–05.2012
	NASA Space Grant Fellowship Sponsor: NASA Duration: 09.2007–06.2009

Proposals Under Review

Federal Grants	Future Operationally Resilient Ground Evolution (FORGE) Mission Data Processing (MDP) Amount: \$496,562 (Szafor Portion: \$229,915) Agency: US Air Force SMC Role: Co-Principal Investigator (CU Principal Investigator: D. Massey, CU Boulder; Industry Principal Investigators at Lockheed Martin, Dell, RedHat, Rocket Communication, & Deloitte) Duration: 08.2018–09.2019
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Declined Proposals

Federal Grants	Dynamic Semantic Communications and Reasoning for Collaborative Decision-Making Amount: \$1,566,919 (Szafor Portion: \$414,933) Agency: Office of Naval Research Role: Co-Principal Investigator (Principal Investigator: N. Ahmed, CU Boulder, Co-Principal Investigators: Brad Hayes, CU Boulder, Mark Campbell, Cornell) Duration: 07.2018–06.2022
	Open Remote sensing Analytics and Collaborative Learning Environment (ORACLE) Amount: \$2,091,000 Agency: US Air Force SMC Role: Co-Principal Investigator (Principal Investigator: S. Palo, CU Boulder; Co-Principal Investigators: B. Possel, CU Boulder; C. Pankratz, CU Boulder; D. Lindholm, CU Boulder; T. Baltzer, CU Boulder; B. Johnson, CU Boulder; T. Hauser, CU Boulder; N. Ahmed, CU Boulder; T. Matsuo, CU Boulder; T. Jones, Digital Globe; M. Bowersox, Digital Globe; B. Legeer, Digital Globe; E. Golden, Digital Globe) Duration: 09.2018–08.2020

VisualFusion: Combing Data from Robotics and Consumer Devices for New Multimedia

Amount: \$50,000

Agency: University of Colorado Boulder Innovative Seed Program

Role: Co-Principal Investigator (Principal Investigator: D. Szafr, CU Boulder; Co-Principal Investigator: N. Ahmed, CU Boulder)

Duration: 09.2017–08.2018

NSF II-NEW. The Colorado Hub for Human-Centered Data Science (CODA)

Amount: \$999,546

Agency: National Science Foundation

Role: Co-Principal Investigator (Principal Investigator: L. Palen, CU Boulder; Co-Principal Investigators: B. Keegan, CU Boulder; A. Volda, CU Boulder; S. Volda, CU Boulder)

Duration: 09.2017–08.2022

Sloan Research Fellowship

Amount: \$60,000

Agency: Sloan Foundation

Role: Principal Investigator

Duration: 09.2018–08.2021

Expert-Driven Progressive Summaries of Spatiotemporal Data

Amount: \$500,000

Agency: DARPA Young Faculty Awards

Role: Principal Investigator

Duration: 09.2018–08.2021

BIGDATA: F. Bringing Qualitative Inductive Methodologies to Big Data Analysis

Amount: \$1,795,941

Agency: National Science Foundation

Role: Principal Investigator (Co-Principal Investigators: J. Brubaker, CU Boulder; C. Fiesler, CU Boulder; M. Paul, CU Boulder)

Duration: 01.2018–12.2022

Data-Mediated Communication with Proximal Robots for Emergency Response

Amount: \$655,969

Agency: National Institute of Standards and Technology Public Safety Innovation Program

Role: Principal Investigator (Co-Principal Investigator: D. Szafr, CU Boulder)

Duration: 10.2017–09.2020

IQ Biology: Data Intensive Biomedical Science (DIBS)

Agency: National Institute of Health T32 Training Grant

Role: Senior Personnel (Principal Investigator: T. Cech, CU Boulder; Co-Principal Investigators: R. Dowell, CU Boulder; M. Lladser, CU Boulder)

IQ Biology: Data Intensive Biomedical Science (DIBS)

Agency: National Science Foundation NRT

Role: Senior Personnel (Principal Investigator: M. Lladser, CU Boulder; Co-Principal Investigators: M. Mozer, CU Boulder; R. Dowell, CU Boulder; T. Cech, CU Boulder; F. Meyer, CU Boulder)

PikTrack: Iconographic Tracking Software for Global Visual Studies

Amount: \$125,000

Agency: American Council of Learned Societies

Role: Co-Principal Investigator (Principal Investigator: L. Gries, CU Boulder; Co-Principal Investigators: Q. Lv, CU Boulder; B. Gosh, UCSB; D. Thorat, UF; Juan Steyn, NWU; R. Swanepoel, NWU)

Duration: 12.2016–05.2018

Enabling Man-Machine Collaboration in Scalable Analytics

Amount: \$361,601

Agency: Air Force Office of Scientific Research Young Investigators Program

Role: Principal Investigator

Duration: 09.2017–08.2020

CRII: III: Supporting Observation-Driven Sensemaking for Multiscale Text Analysis

Amount: \$153,676

Agency: National Science Foundation

Role: Principal Investigator

Duration: 05.2016–04.2018

Industry Grants Enabling Analyst-Oriented Data Fusion for Public Health Analysis

Amount: \$149,843

Agency: Johnson & Johnson Stem2D

Role: Principal Investigator

Duration: 09.2017–08.2021

Crafting Explanatory Narratives from Exploratory Visualization

Amount: \$66,115

Agency: Google Faculty Research Awards

Role: Principal Investigator

Duration: 09.2017–08.2018

Using Visual Analytics for Improved Machine Classification

Amount: \$53,089

Agency: Google Faculty Research Awards

Role: Principal Investigator

Duration: 09.2016–08.2017

Increasing Machine Learning Comprehensibility via Visualization

Amount: \$69,146

Agency: Bloomberg Data Science Research Grants

Role: Principal Investigator

Duration: 09.2016–08.2017

Guiding Effective Information Visualization for Mixed Reality

Amount: \$100,000

Agency: Microsoft Hololens Academic Research

Role: Principal Investigator

Duration: 09.2016–8.2017

Teaching

Courses Taught

Sp. 2018 **INFO 4602/5602: Information Visualization**

University of Colorado Boulder

Enrollment: 63 students (28 undergraduates and 33 graduates)

F. 2017 **INFO 3401: Information Exploration**

University of Colorado Boulder

First offering, required course for Information Science

Enrollment: 9 students

Sp. 2017 **INFO 4602/5602: Information Visualization**

University of Colorado Boulder

First offering

Enrollment: 40 students (22 undergraduates and 18 graduates)

F. 2016 **INFO 1201: Computational Reasoning I**

University of Colorado Boulder, Co-Instructor: Stephen Volda

First offering, required course for the College of Media, Communication, and Information

Enrollment: 134 undergraduate students

Teaching Assistantships

- F. 2009 **CS838: Human-Computer Interaction**
University of Wisconsin-Madison
Enrollment: 8 graduate students
Teaching Assistant for first offering
- F. 2009 **CS 302: Introduction to Programming**
University of Wisconsin-Madison
Enrollment: 110 undergraduate students

Guest Lectures

- Sp. 2018 "Data Visualization." *INFO 1121: Introduction to Information Science: Designing Interactions*
- Sp. 2018 "Visual Communication." *MUSM 5011: Introduction to Museum Studies*
- F. 2017 "Expectation Maximization." *INFO 4604/5604: Applied Machine Learning*
- F. 2017 "Visual Data Mining." *CSCI 4502/5502: Data Mining*
- F. 2017 "Meet the Faculty." *INFO 7000: Introduction to Ph.D. Studies*
- F. 2017 "Meet the Faculty." *CSCI 6000: Introduction to the Computer Science Ph.D. Program*
- Sp. 2016 "Technology & Museum Studies." *MUSM 5011: Introduction to Museum Studies*
- F. 2016 "Early Career Faculty Panel." *CSCI 6000: Introduction to the Computer Science Ph.D. Program*
- F. 2016 "Model-View-Controller." *ATLS 5419: Introduction to Virtual Reality*
- Sp. 2016 "Introduction to Visualization." *CMCI 1020: Concepts & Creativity*
- F. 2015 "Driving Scalable Visualization with Perception." *CSCI 4830: Big Data & HCI*
- F. 2015 "The Graphics Pipeline." *ATLS 5419: Introduction to Virtual Reality*
- F. 2015 "Introduction to Three.js." *ATLS 5419: Introduction to Virtual Reality*
- Sp. 2015 "Interaction in Visualization." *CS 838: Visualization*
- F. 2014 "Color for Computer Graphics." *CS 559: Computer Graphics*
- F. 2014 "Image Compression." *CS 559: Computer Graphics*
- Sp. 2012 "Perceptually-Driven Sequence Visualization." *CS 838: Visualization*

Professional Development

- 2016 CRA New Faculty Teaching Workshop, San Diego, CA

Mentorship & Advising

Ph.D. Direct Advisees

- 2017–Present **Stephen Smart**, Computer Science, University of Colorado Boulder
- 2016–Present **Matthew Whitlock**, Computer Science, University of Colorado Boulder
- 2016–Present **Michael Iuzzolino**, Computer Science, University of Colorado Boulder
> Co-advised with Daniel Szafr

Ph.D. Thesis Committee Membership

- 2018 **Charles Luke Burks**, Ph.D. Comprehensive Exam, Department of Aerospace Engineering, University of Colorado Boulder
- 2017 **Reem Albaghli**, Ph.D. Thesis, Department of Computer Science, University of Colorado Boulder
People are Data: Methods for Eliciting Human Feedback in Robotic Tasking, Advisor: Nisar Ahmed
A Framework to Design and Evaluate Wearable Interactive Systems for Health, Advisor: Ken Anderson
- 2017 **Brett Roads**, Ph.D. Thesis, Department of Computer Science, University of Colorado Boulder
The Design of Efficient Training and Decision-Support Systems for Visual Categorization, Advisor: Michael Mozer
- 2015 **Khalid Alharbi**, Ph.D. Thesis, Department of Computer Science, University of Colorado Boulder
A Deep and Longitudinal Approach to Mining Mobile Applications, Advisor: Tom Yeh

Ph.D. Qualifying Committee Membership

- 2018 **Ashlynn Daughton**, Department of Information Science, University of Colorado Boulder
- 2018 **Xiaolei Huang**, Department of Information Science, University of Colorado Boulder

Masters Students

- 2018–Present **Sreesha Nath**, Computer Science, University of Colorado Boulder
2018–Present **Supriya Naidu**, Computer Science, University of Colorado Boulder
2017–Present **Keke Wu**, Creative Technologies, University of Colorado Boulder
2017–2018 **Justin Chin**, Computer Science, University of Colorado Boulder
2017–2018 **Hayeong Song**, Computer Science, University of Colorado Boulder
> *Thesis: Measuring the Role of Visualization on Missing Values in Time Series Data*
> *Now a Ph.D. student at Georgia Tech*

2016–2018 **Pratima Sherkane**, Computer Science, University of Colorado Boulder
2016–2018 **Hemang Bansal**, Computer Science, University of Colorado Boulder
> *Now at CenturyLink*

2016–2017 **Dasha Pruss**, Information Science, University of Colorado Boulder
> *co-advised with Michael Paul*
> *Now at the University of Pittsburgh Philosophy of Science Ph.D. Program*

2017 **Mridula Natarjan**, Computer Science, University of Colorado Boulder
2016–2017 **Praveen Devaraj**, Computer Science, University of Colorado Boulder
2016–2017 **Yogitha Madhasu**, Computer Science, University of Colorado Boulder
> *Now at VISA*

2016 **Shashidhar Prabhu**, Computer Science, University of Colorado Boulder

Undergraduate Students

- 2017–2018 **Michael Xiao**, Computer Science, University of Colorado Boulder
> *Co-advised with J. Brubaker*
> *2017-2018 Discovery Learning Assistant*

2017–2018 **Ian Fawaz**, Computer Science, University of Colorado Boulder
> *Co-advised with J. Brubaker*
> *2017-2018 Discovery Learning Assistant*

2016–2018 **Tetsumichi Umada**, Computer Science, University of Colorado Boulder
> *Now in the Computer Science Master's Program at CU Boulder*

2017 **Wil Braun**, Computer Science, University of Colorado Boulder
2017 **Girishkumar Ramkumar**, Computer Science, University of Colorado Boulder
2016–2017 **Ryan Mustari**, Applied Mathematics & Economics, University of Colorado Boulder
> *2016-2017 UROP Recipient*

2016 **Alex Thompson**, Computer Science, University of Colorado Boulder
2016 **Connor McGuinness**, Computer Science, University of Colorado Boulder
> *Now at Uber*

2015–2016 **Yusef Suhail**, Computer Science, University of Wisconsin-Madison
2014 **Andrew Hermus**, Computer Science, University of Wisconsin-Madison
> *Co-supervised with Eric Alexander*
> *Now at Microsoft*

2013 **Benjamin Reddersen**, Computer Science, University of Wisconsin-Madison

Team Supervision

- 2017–2018 **MR-CAT: Mixed Reality Content Authoring Tool**. B. Arnot, B. Chung, R. Craig, J. Mitchell, N. Pfeufer, & B. Wilson, Computer Science Senior Projects

Professional Activities & Service

Outreach

- 2016–present Aspirations in Computing Colorado Affiliate Committee, National Center for Women in Technology
2010–2015 ACM-W Mentor, Department of Computer Sciences, University of Wisconsin-Madison
2009 Majors Fair Representative, Department of Computer Sciences, University of Wisconsin-Madison

2009 Department Guide, Department of Computer Sciences, University of Washington

Departmental Service

- 2015–present Graduate Program Committee, Department of Information Science
- 2016–present Curriculum Committee: Computing Core, Department of Information Science
- 2015–2018 Graduate Program Committee, Department of Computer Science
- 2017–2018 Faculty Search Committee, Department of Information Science
- 2016 - 2017 External Programs Coordinator, Department of Information Science
- 2015 Curriculum Creation Committee, Department of Information Science
 - > Designed novel undergraduate and graduate curricula in Information Science, focusing on the intersection of data, people, and technology. These curricula blend topics from computer science, social science, and data science, emphasizing broad application of these skills across different domains.
- 2015 Faculty Search Committee, Department of Information Science

College Service

- 2015-2016 Community and Diversity Committee, College of Media, Communication, and Information, University of Colorado Boulder

University Service

- 2017 - present Advisory Board Member, Center for Research Data & Digital Scholarship (CRDDS)
- 2017 - present Digital Humanities Certificate Committee Member
- 2018 Visualization Contest Judge, Center for Research Data & Digital Scholarship (CRDDS)
- 2016 - 2017 Co-Chair, Digital Humanities Certificate Committee
 - > Resulted in creation of a new interdisciplinary graduate certificate program
- 2016 Faculty Search Committee, Leeds School of Business
- 2015-2016 Research Data Advisory Committee
- 2014–2015 Digital Humanities Research Network Founding Member & Coordinator, University of Wisconsin-Madison
- 2015 Organizing Committee Member, University of Wisconsin-Madison Digital Humanities+Art Symposium

Program Committee Membership

- 2018–present ACM Conference on Human Factors in Computing Systems
- 2018–present Information+
- 2017–present Human Computer Interaction Consortium
 - > *Colorado Governing Board Representative*
- 2017–present European Conference on Visualization State-of-the-Art Reports (EuroVis STARS)
- 2017–present IEEE VIS Information Visualization
- 2017 VDS: Visual Data Science Symposium
- 2017 VISSOFT: IEEE Working Conference on Software Visualization
- 2016–2017 LDV: IEEE Symposium on Large Data Analysis and Visualization
- 2014–2016 BioVis: Symposium on Biological Data Visualization

Grant Referee Service

- 2018 Reviewer, Research Innovation Office Innovative Seed Grants
- 2017 Reviewer Ad Hoc, Icelandic Research Foundation
- 2017 Reviewer, National Science Foundation
- 2015, 2017 Reviewer Ad Hoc, National Science Foundation

Journal & Conference Referee Service

- 2018 Science Advances
- 2018 IEEE TVCG: Transactions on Visualization and Computer Graphics
- 2018 IEEE TBD: Transactions on Big Data
- 2016–2018 EuroVis: Eurographics Conference on Visualization
- 2017–2018 IEEE TVCG: IEEE Transactions on Visualization and Computer Graphics

- 2016–2018 ACM CHI: ACM Conference on Human Factors in Computing Systems
 > *Special Recognition*: 2016
- 2013–2018 IEEE Information Visualization
 > *Special Recognition*: 2014, 2015
- 2016–2017 IEEE LDAV: IEEE Symposium on Large Data Analysis and Visualization
- 2015–2017 IEEE VAST: Visual Analytics Science and Technology
- 2013–2016 BioVis: Symposium on Biological Data Visualization
- 2016 IEEE RO-MAN: IEEE Conference on Robot and Human Interactive Communication
- 2014, 2016 BMC Medical Informatics and Decision Making
- 2015–2016 Informatics
- 2015 Cartography and Geographic Information Science)

Professional & Academic Memberships

- 2018–Present Sigma Xi Full Member
- 2010–Present ACM Member
- 2010–Present IEEE Member
- 2017–Present Vision Science Society Member
- 2008–Present Sigma Alpha Lambda Honor Society Member
- 2008–Present Phi Theta Kappa International Honor Society Member
- 2014–2015 IS&T Student Member
- 2012–2015 WHCI+D Member