Danielle Albers Szafir

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Professional Experience

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

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

Education

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

Honors & Awards

2018 **Forbes 30 Under 30 for Science**
Forbes Magazine

2017 **Best Paper Award**
IEEE VIS Information Visualization for "Modeling Color Difference for Visualization Design"

2016 **Doctoral Dissertation Award Honorable Mention**
IEEE Visualization and Graphics Technical Committee VGP Doctoral Dissertation Award

2014 **MERL Best Student Paper Award**
IS&T 22nd Color and Imaging Conference for "Adapting Color Difference for Design"

2014 **MERI Best Presentation Award, Honorable Mention**
McPherson Eye Research Institute Symposium for "Lightness Constancy in Surface Visualization"

2013 **Best Poster Award**
IEEE VIS Scientific Visualization for "Lightness Constancy in Surface Visualization"

2013 **Doctoral Colloquium**
IEEE VIS

2010–2012 **Research Fellow**
BACTER Institute, University of Wisconsin-Madison

2007–2009 **NASA Space Grant Scholar**
NASA Space Grant

2007–2009 **Dean's List**
University of Washington

Publications

Note that *s* indicates student authors 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*.

Journal Publications

A. Sarikaya, M. Gleicher, & **D. Albers Szafir**. "Design Factors for Summary Visualization in Visual Analytics." *Computer Graphics Forum*, 2018. (under review)

D. Albers Szafir."Modeling Color Difference for Visualization Design." *IEEE Transactions of Visualization and Computer Graphics*, 2018 (to appear). In the Proceedings of IEEE VIS 2017.
> Best Paper Award (Top paper of 170 submissions)
> Acceptance Rate: 22.9%

D. Albers Szafir, D. Stuffer(s), Y. Sohail(s), & M. Gleicher. "TextDNA: Visualizing Word Usage Patterns with Configurable Colorfields." *Computer Graphics Forum*, 35: 421–430, 2016. In the Proceedings of the Eurographics Conference on Visualization
> 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(s), & M. Gleicher. "Lightness Constancy in Surface Visualization." *IEEE Transactions on Visualization and Computer Graphics*, 22(9): 2107–2121, 2016.

A. Sarikaya(s), **D. Albers**, J. Mitchell, & M. Gleicher. "Visualizing Validation of Protein Surface Classifiers." *Computer Graphics Forum*, 33(3): 171–180, 2014. In the Proceedings of the Eurographics Conference on Visualization.
> 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. In the Proceedings of the IEEE Information Visualization Conference.
> Acceptance Rate: 25%

M. Gleicher, **D. Albers**, R. Walker, I. Jusufi(s), C. Hansen, & J. Roberts. "Visual Comparison for Information Visualization." *Information Visualization*, 10(4): 289–309, 2011.

Refereed Conference Papers

M. Whitlock(s), E. Hanner(s), J. Brubaker, S. Kane, & **D. Albers Szafir**. "Interacting with Distant Objects in Augmented Reality." *IEEE Virtual Reality*, 2018.

C. Diaz(s), M. Walker(s), **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.
> 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*, 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*, 2014.
> Integrated into D3 as d3-jnd and Tableau 10

D. Albers, M. Correll[(s)], & 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)*, 2014.
> Acceptance Rate: 23%

M. Correll[(s)], **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)*, 2012.
> Acceptance Rate: 23%

Workshops & Colloquia[1]

A. Daughton[(s)], D. Pruss[(s)], B. Arnot[(s)], **D. Albers Szafir** & 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.* 2017.*

D. Albers Szafir & C. Fiesler. "A Crash-Course in P5." *NCWIT Aspirations in Computing Colorado Affiliate.* 2017.
> Hands-on workshop for 72 high school women

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

E. Alexander[(s)] & **D. Albers Szafir**. "D3.js: Javascript for Data Visualization." *Second Annual Digital Humanities+Art Symposium: Going Public.* 2015.

M. Correll[(s)], E. Alexander[(s)], **D. Albers Szafir**, A. Sarikaya[(s)], & M. Gleicher. "Navigating Reductionism and Holism in Evaluation." *BELIV '14: Beyond Time and Errors—Novel Evaluation Methods for Visualization*, 2014.*

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

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

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

Refereed Abstracts

A. Kelly[(s)], M. Whitlock[(s)], B. Nickoloff[(s)], A. Lam[(s)], **D. Albers Szafir**, & S. Voida. "Becoming Butterflies: Interactive Embodiment of the Butterfly Lifecycle." *UbiComp Poster Proceedings*, 2017.

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

D. Albers Szafir. "The Effects of Size and Shape on Color Perception." *Vision Science Society Annual Meeting*, 2017.

D. Albers Szafir & M. Gleicher. "Visualization-Aware Color Design." *EuroVis Poster Proceedings*, 2016.

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

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

D. Albers, A. Sarikaya[(s)], & M. Gleicher. "Lightness Constancy in Surface Visualization." *Poster Abstracts of IEEE VIS*, 2013.
> Best Poster Award, Scientific Visualization Track

* indicates peer-review.

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

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

D. Albers & M. Gleicher. "Poster: Perceptual Principles for Scalable Sequence Alignment Visualization." *2010 IEEE Information Visualization Poster Proceedings*, 2010.

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

Panel & Symposium Organization

C. Nothelfer(s), Z. Bylinskii(s), M. Elliott(s), C. Xiong(s), & **D. Albers Szafir**. "Vision Science Meets Visualization." *IEEE VIS*. Phoenix, AZ, 2017.

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

Dissertation

D. Albers Szafir. "Utilizing Color for Perceptually-Driven Data Visualization." *University of Wisconsin-Madison*, 2015.
> Honorable Mention, IEEE Visualization & Graphics Pioneers Best Dissertation Award

Talks

Invited Talks & Panels

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

"Scaling Up Visualization through Visual Cognition." *BioFrontiers 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.

"A Day in the Lab: Information Science at CU Boulder." *ACM Interactions*, 2017.

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

Funding

Funded Grants

Collaborative Analyst-Machine Perception for Robust Data Fusion
Amount: $353,936
Agency: Air Force SMC-RSX
Role: Co-PI (PI: N. Ahmed, Aerospace Engineering, CU Boulder)
Duration: 06.2017–05.2018

CRII: CHS: Data-Driven Automation of Color Encodings for Data Visualization
Amount: $174,925
Agency: National Science Foundation
Role: PI
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-PI (PI: V. Hulden)
Duration: 06.2017–05.2018

FieldView: Using Mobile Devices to Blend Data Collection and Analysis for Field Research
Amount: $30,000
Agency: University of Colorado Boulder Innovative Seed Grant
Role: PI (Co-PI: Daniel Szafir, 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

Corporate Gifts

Information Visualization Hackathon Sponsorship
Amount: $10,000
Organization: Zayo Group
Role: PI
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

Teaching

Sp. 2018 **INFO 4602/5602: Information Visualization**
University of Colorado Boulder
Enrollment:60 students (20 undergraduates and 40 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)
Mean Instructor Rating: 5.3/6.0

F. 2016 **INFO 1201: Computational Reasoning I**
University of Colorado Boulder, Co-Instructor: Stephen Voida
First offering, required course for the College of Media, Communication, and Information
Enrollment: 142 undergraduate students
Mean Instructor Rating: 5.00/6.00

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
Mean Instructor Rating: 4.58/5.00

Mentorship & Advising

Ph.D. Students

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 Szafir

Ph.D. Thesis Committee Membership

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

Masters Students

2017–Present **Keke Wu**, Creative Technologies, University of Colorado Boulder

2017–Present **Hayeong Song**, Computer Science, University of Colorado Boulder

2016–Present **Pratima Sherkane**, Computer Science, University of Colorado Boulder

2016–Present **Hemang Bansal**, Computer Science, University of Colorado Boulder

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–present **Michael Xiao**, Computer Science, University of Colorado Boulder
> 2017-2018 Discovery Learning Assistant

2016–present **Tetsumichi Umada**, Computer Science, University of Colorado 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

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

University Service

2017 - present **Advisory Board Member, Center for Research Data & Digital Scholarship (CRDDS)**
University of Colorado Boulder

2016 - present **Co-Chair, Digital Humanities Certificate Committee**
University of Colorado Boulder
> Resulted in creation of a new interdisciplinary graduate certificate program

2015 - present **Graduate Program Committee**
Department of Information Science, University of Colorado Boulder

2015 - present **Graduate Program Committee**
Department of Computer Science, University of Colorado Boulder

2016–present **Curriculum Committee: Computing Core**
Department of Information Science, University of Colorado Boulder

2018 **Faculty Search Commitee**
Department of Information Science, University of Colorado Boulder

2016 - 2017 **External Programs Coordinator**
Department of Information Science, University of Colorado Boulder

2016 **Faculty Search Committee**
Leeds School of Business, University of Colorado Boulder

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

2015-2016 **Research Data Advisory Committee**
University of Colorado Boulder

2015 **Curriculum Creation Committee**
Department of Information Science, University of Colorado Boulder
> 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, University of Colorado Boulder

2014–2015 **Digital Humanities Research Network Founding Member & Coordinator**
University of Wisconsin-Madison

2012–2015 **Visualization Reading Group Founder & Coordinator**
University of Wisconsin-Madison

2015 **Organizing Committee Member**
University of Wisconsin-Madison Digital Humanities+Art Symposium

Program Committee Membership

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 LDAV: 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 TBD: Transactions on Big Data
2016–2018 EuroVis: Eurographics Conference on Visualization
2017 IEEE TVCG: IEEE Transactions on Visualization and Computer Graphics
2017 IEEE TVCG: IEEE Transactions on Visualization and Computer Graphics
2016–2017 ACM CHI: ACM Conference on Human Factors in Computing Systems
Special Recognition: 2016
2013–2017 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
2015, 2017 Vision Science Society Member
2014–2015 IS&T Student Member
2012–2015 WHCI+D Member
2008–Present Sigma Alpha Lambda Honor Society Member
2008–Present Phi Theta Kappa International Honor Society Member

Professional references available upon request.