Alex Kale

visualization • uncertainty • data cognition • HCI
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Experience

2022 – present	Assistant Professor, University of Chicago Department of Computer Science & Data Science Institute
Summer 2021	Research Intern, Microsoft Research Interpret ML team Supervisor: Rich Caruana • rcaruana@microsoft.com
2020 – 2022	Visiting Scholar, Northwestern University MU Collective Supervisor: Jessica Hullman • jhullman@northwestern.edu
2017 – 2022	Research Assistant, University of Washington MU Collective & Interactive Data Lab Supervisor: Jessica Hullman • jhullman@northwestern.edu
2015 – 2017	Research Assistant, University of Washington Vision-Cognition Lab Supervisor: Scott Murray - somurray@uw.edu

Education

2017 – 2022	University of Washington, Ph.D. in Information Science Advisor: Jessica Hullman • jhullman@northwestern.edu
2017 – 2020	University of Washington, M.S. in Information Science (GPA: 4.0)
2011 – 2015	University of Washington, B.S. in Psychology with Honors Minors in Music and Philosophy, Magna Cum Laude (GPA: 3.95) Advisor: Steve Buck • sbuck@uw.edu
2007 – 2011	Pullman High School, Valedictorian (GPA: 4.0)

Honors and Awards

2023	VGTC Visualization Dissertation Award Honorable Mention
2021	Honorable Mention Paper Award, IEEE VIS conference
2020	InfoVis Best Paper Award, IEEE VIS conference
2018	NSF Graduate Research Fellowship Program Honorable Mention
2017	Top Scholar Award, UW Graduate School

2015	Dean's Medal Nominee, UW
2015	Gonfalonier, banner carrier at UW Commencement
2014 – present	Phi Beta Kappa
2014	Guthrie Prize for Meritorious Writing in Psychology, UW
2011 – 2015	Dean's List, UW (every quarter of undergraduate)

Publications

Computer Science Conference Papers

Kale, A. (2026). Toward a Logic of Generalization about Visualization as a Decision Aid. *IEEE Trans. Visualization & Comp. Graphics (Proc. VIS), 31 (1).* https://arxiv.org/abs/2508.06751

Metha, K., Kindlmann, G., **Kale, A.** (2026). Designing for Disclosure in Data Visualizations. *IEEE Trans. Visualization & Comp. Graphics (Proc. VIS), 31 (1).* https://arxiv.org/abs/2508.08383

Ling, Y., **Kale, A.**, Imas, A. (2025). Underreporting of AI Use: The Role of Social Desirability Bias. *In submission.*

Long, S., **Kale, A.**, Wu, E., Chang, R., Kay, M. (2025). Visual Decoding Operators: Toward Generative Process Models of Graph Comprehension. *In submission.*

Kojan, L., Horstmann, H. S., Mortaga, M., Ernst, D., Schönberger, A., **Kale, A.**, Valdez, A. C. (2025). Flatten the Curve: How Experts and Laypeople Use Epidemic Model Visualizations for Reasoning. *In submission.*

Hullman, J., **Kale, A.**, Hartline, J. (2025). Underspecified Human Decision Experiments Considered Harmful. *In Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems (CHI '25).* doi: 10.1145/3706598.3714063.

Kale, A., Liu, D., Ayala, G., Schwab, H., McNutt, A. (2025). What Can Interactive Visualization do for Participatory Budgeting in Chicago? *IEEE Trans. Visualization & Comp. Graphics (Proc. VIS), 30 (1).* doi: 10.1109/TVCG.2024.3456343

Guo, Z., **Kale, A.**, Kay, M., Hullman, J. (2025). VMC: A Grammar for Visualizing Statistical Model Checks. *IEEE Trans. Visualization & Comp. Graphics (Proc. VIS), 30 (1).* doi: 10.1109/TVCG.2024.3456402

Kale, A., Guo, Z., Qiao, X.L., Heer, J., Hullman, J. (2024). EMV: Incorporating Model Checking into Exploratory Visual Analysis. *IEEE Trans. Visualization & Comp. Graphics (Proc. VIS), 29 (1).* doi: 10.1109/TVCG.2023.3326516

Kale, A., Lee, S., Goan, T.J., Tipton, E., Hullman, J. (2023). MetaExplorer: Facilitating Reasoning with Epistemic Uncertainty in Meta-analysis. *In Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems (CHI '23).* doi: 10.1145/3544548.3580869

Sarma, A., **Kale, A.,** Moon, M., Taback, N., Chevalier, F., Hullman, J., and Kay, M. (2023). multiverse: Multiplexing alternative data analyses in R notebooks. *ACM Conference on Human Factors in Computing Systems (CHI '23).* doi: 10.1145/3544548.3580726

Wang, Z. J., **Kale, A.**, Nori, H., Stella, P., Nunnally, M. E., Chau, D. H., Vorvoreanu, M., Vaughan, J. W., Caruana, R. (2022). Interpretability, Then What? Editing Machine Learning Models to Reflect Human Knowledge and Values. *Proceedings of the 28th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining.* https://interpret.ml/gam-changer

Kale, A., Wu, Y., Hullman, J. (2022). Causal Support: Modeling Causal Inferences with Visualizations. *IEEE Trans. Visualization & Comp. Graphics (Proc. VIS), 28 (1).* doi: 10.1109/TVCG.2021.3114824 **Honorable Mention Award.**

Kale, A., Kay, M., Hullman, J. (2021). Visual Reasoning Strategies for Effect Size Judgments and Decisions. *IEEE Trans. Visualization & Comp. Graphics (Proc. InfoVis), 27 (1).* doi: 10.1109/TVCG.2020.3030335 **Best Paper Award.**

Liu, Y., **Kale, A.**, Altoff, T., Heer J. (2020). Boba: Authoring and Visualizing Multiverse Analyses. *IEEE Trans. Visualization & Comp. Graphics (Proc. InfoVis), 27 (1).* doi: 10.1109/TVCG.2020.3028985

Kale, A., Kay, M., Hullman, J. (2019). Decision-Making Under Uncertainty in Research Synthesis: Designing for the Garden of Forking Paths. *ACM Conference on Human Factors in Computing Systems (Proc. CHI).* doi: 10.1145/3290605.3300432

Conlen, M., **Kale, A.**, Heer, J. (2019). Capture & Analysis of Active Reading Behaviors for Interactive Articles on the Web. *Eurographics Conference on Visualization (EuroVis), 38 (3).* http://idl.cs.washington.edu/papers/idyll-analytics

Kale, A., Nguyen, F., Kay, M., Hullman, J. (2019). Hypothetical Outcome Plots Help Untrained Observers Judge Trends in Ambiguous Data. *IEEE Trans. Visualization & Comp. Graphics (Proc. InfoVis), 25 (1).* doi: 10.1109/TVCG.2018.2864909

Hullman, J., Qiao, X., Correll, M., **Kale, A.**, Kay M. (2019). In Pursuit of Error: A Survey of Uncertainty Visualization Evaluation. *IEEE Trans. Visualization & Comp. Graphics (Proc. InfoVis), 25 (1).* P 903-913. doi: 10.1109/TVCG.2018.2864889

Workshop Papers

Kale, A., Hullman, J (2019). Adaptation and Learning Priors in Visual Inference, Position Paper. *VisxVision Workshop at IEEE VIS 2019.*

Psychology Journal Articles

Schallmo M-P., Kolodny T., **Kale A.**, Millin R., Flevaris A.V., Edden R.A.E., Gerdts J., Bernier R.A., Murray S.O. (2020). Weaker neural suppression in autism. *Nature Communications*, *11* (*1*), 2675.

Schallmo M-P., **Kale A.**, Murray S.O. (2019). The time course of different surround suppression mechanisms. *Journal of Vision*, *19* (*4*), 12.

Schallmo, M-P., Millin, R., **Kale, A.**, Kolodny, T., Edden, R.A.E., Bernier, R.A., Murray, S.O. (2019). Glutamatergic facilitation of neural responses in MT enhances motion perception in humans. *NeuroImage*, *184*, 925-931. doi: 10.1101/283994

Millin, R., Kolodny, T., Flevaris, A.V., **Kale, A.**, Schallmo, M-P, Gerdts, J., Bernier, R.A., Murray, S. (2018). Reduced auditory cortical adaptation in autism spectrum disorder. *eLife Neuroscience.* doi: 10.7554/eLife.36493

Murray, S.O., Schallmo, M-P, Kolodny, T., Millin, R., **Kale, A.**, Thomas, P., Rammsayer, T.H., Troche, S.J., Bernier, R.A., Tadin, D. (2018). Sex Differences in Visual Motion Processing. *Current Biology*, *28* (*17*), 2794-2799. doi: 10.1016/j.cub.2018.06.014

Schallmo, M-P., **Kale, A.**, Millin, R., Flevaris, A.V., Brkanac, Z., Edden, R.AE., Bernier, R.A., & Murray, S.O. (2018). Suppression and facilitation of human neural responses. *eLife Neuroscience.* doi: 10.7554/eLife.30334

Vincent, J., **Kale, A.**, & Buck, S. (2016). Luminance dependent long-term chromatic adaptation. *Journal of the Optical Society of America A, 33*(*3*), A164-A169. doi: 10.1364/JOSAA.33.00A164

Invited Talks

"Designing for Robust Visual" University of North Carolina at Chapel Hill, Seminar on Visualization. Feb 2024.

"Designing for Epistemic Uncertainty in Research Synthesis" University of Wisconsin at Madison, Seminar on Systematic Review and Meta-Analysis. Sept 2023.

"Data Visualization for Decision Making" Chicago Booth School of Business, Behavioral Science Seminar Series. April 2023.

"Using Boba to Author and Visualize Multiverse Analyses" Society for Improving Psychological Science (SIPS). June 2022.

"Scientific Visual Data Analysis." Applied Research Consortium, UW College of Built Environments. May 2021.

"Expect Users to Satisfice: Designing Interfaces for Reasoning with Uncertainty." Symposium on Data Science and Statistics, ASA. June 2020.

"Visualizing Uncertainty." Interactive Data Visualization, UW Computer Science and Engineering. Feb 2020.

"Color and Perception in Data Visualization." Interactive Information Visualization, UW Information School. Oct 2018, May 2019.

Grants and External Funding

Institute of Education Sciences (IES): National Center for Education Research (NCER): Statistical and Research Methodology in Education ($900k). *Developing and Evaluating Tools for Communicating Statistical Evidence to Education Decision-Makers*. PI: Elizabeth Tipton; Co-PIs: **Alex Kale**, Kaitlyn Fitzgerald.

Teaching

University of Chicago, Chicago, IL.
Instructor of record.
• CMSC 14100: Computer Science 1. Fall 2022.
• CMSC 31801: Topics in Data Science. Winter 2023. Spring 2024. Spring 2025.
• DATA 22700: Data Visualization and Communication. Spring 2023.
• DATA 23700: Visualization for Data Science. Fall 2023. Winter 2025.
• DATA 31500: Data Interaction. Fall 2024.

University of Washington, Seattle, WA.
Graduate student volunteer leader.
• CSE 590H: Interactive Systems Seminar. Academic year 2019 – 2020.

Graduate student teaching assistant.
• INFO 474: Interactive Information Visualization. Spring 2019.
• INFO 180: Introduction to Data Science. Fall 2018.

Undergraduate student teaching assistant.
• PSYCH 317: Introduction to Probability and Statistics for Psychology. Fall 2014.
• PSYCH 318: Statistical Inference in Psychological Research. Winter 2015.

Mentoring

As a Professor

PhD student advising.
□ *Krisha Mehta*, University of Chicago, PhD in Computer Science.
□ *Danni Liu*, University of Chicago, PhD in Computer Science.

Research mentorship.

- *Gabriela Ayala*, University of Chicago, MS in Computational Analysis and Public Policy.
- *Redon Kurti*, University of Chicago, Master's Program in Computer Science.
- *Harper Schwab*, University of Chicago, Undergraduate in Data Science.
- *Andrew McNutt*, Unversity of Chicago, PhD in Computer Science.
- *Rhea Madhogarhia*, University of Chicago, Undergraduate in Computer Science and Cognitive Science.
- *Sheng Long*, Northwestern University, PhD in Computer Science (serving on thesis committee).
- *Sami Elahi*, University of Chicago, Graduate Student at Large.
- *Connor Scully-Allison*, University of Chicago, Postdoctoral Fellow in Data Science (advising postdoc).
- *Begum Akkas*, University of Chicago, MS in Computational Analysis and Public Policy.
- *Ayan Nath*, University of Chicago, Undergraduate in Computer Science (advising senior thesis).

As a PhD Student

Informal research advising.

- *Priyanka Nanayakkara*, Northwestern University, PhD in Technology & Social Behavior.
- *Abhraneel Sarma*, Northwestern University, PhD in Computer Science.
- *Phoebe Moh*. University of Maryland, PhD in Computer Science.

Project-based mentorship.

- *Emily Qiao*. Northwestern University, MS in Computer Science.
- *Francis Nguyen*. University of Washington, Undergraduate in Information Science.

Service

Internal at University of Chicago

2024 – present	Faculty Quality of Life Committee
2022 – present	Data Science Institute Postdoc Search Committee
2022 – 2024	Computer Science PhD Admissions Committee
2022 – present	Committee on Data Science

External

2025 – present	ACM CHI Program Committee, AC in Visualization
2023 – present	IEEE VIS Organizing Committee, Publicity Chair
2023 – present	IEEE VIS Program Committee

Generally, I review about 15 papers per year for IEEE VIS, IEEE EuroVis, ACM CHI, Journal of Vision, and other publications. My reviews have been recognized for being thorough and constructive. E.g., one of my reviews for Journal of Vision was recognized by the Editorial Board as an “Exceptionally Good Review,” a formal distinction given to only a few of the most thoughtful, expert, and helpful reviews.