Michael Correll, PhD.

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Research Interests

My goal is to build a world where data-based decision making is popular, reliable, and ethical. To that end, I am interested in the potentials and perils involved in using information visualization to make sense of the world. My work involves exploring data and data analytics at all levels: from low-level experimental analyses of how people extract statistical information from charts and graphs, to the construction and evaluation of visual analytics systems to help analysts in specific domains solve novel or interesting problems, and up to the level of reflections on visualization and data science in theoretical and ethical terms.

Professional Experience

- Summer 2023-Present: Research Associate Professor + Roux Institute Member, Khoury College of Computer Science, Northeastern University
- Spring 2022-Spring 2023: Lead Research Staff, Tableau Research, Tableau Software.
- Spring 2020-Spring 2022: Senior Research Staff, Tableau Research, Tableau Software.
- Fall 2017-Spring 2020: Research Scientist, Tableau Research, Tableau Software.
- Fall 2015-Fall 2017: Research Associate, Interactive Data Lab, Department of Computer Science, University of Washington.
- Summer 2010-Summer 2015: Research Assistant, Graphics and Vision Lab, Department of Computer Sciences, Univ. of Wisc. – Madison.
- Summer 2008: Intelligence Aide (Computer Science), Office of Naval Intelligence.

Teaching Experience

- Spring '16: Instructional Staff, CSE512: Data Visualization, Department of Computer Science and Engineering, Univ. of Washington.

- Spring '12: Teaching Assistant, COSC838/638: Visualization, Department of Computer Sciences, Univ. of Wisc. – Madison.
- Spring '10: Teaching Assistant, COSC838: Visualization and COSC679: Computer Game Technology, Department of Computer Sciences, Univ. of Wisc. – Madison.
- Summer '09: Teaching Assistant, REAS: Mathematical Logic, Johns Hopkins Center for Talented Youth, Lancaster site.
- Fall '09: Teaching Assistant, MATH221: Calculus and Analytic Geometry, Department of Mathematics, Univ. of Wisc. – Madison.
- Fall '08: Teaching Assistant, PHIL215: Critical Thinking. Department of Philosophy, St. Mary's College of Maryland.
- Summer '06, Summer '07: Teaching Assistant, IROB: Introduction to Robotics, Johns Hopkins Center for Talented Youth, Palo Alto site.

Education

- Fall 2009-Fall 2015: Graduate Student, Department of Computer Sciences, Univ. of Wisc. – Madison.
  - Awarded Ph.D., August 2015.
  - Thesis: "Improving Visual Statistics"
  - Awarded M.S. (3.7/4.0 GPA), May 2011.
  - Research area: Information Visualization.
  - Advisor: Michael Gleicher.
- Fall 2005-Spring 2009: St. Mary's College of Maryland
  - Awarded B.A., summa cum laude (3.9/4.0 GPA), May 2009.
  - Majors: Philosophy, Computer Science. Minor in Mathematics.
  - St. Mary's Senior Project: "Can Machines Think: A Philosophical Guide."
- Fall 2001-Spring 2005: Richard Montgomery High School
  - International Baccalaureate Diploma (3.5/4.0 GPA).

Publications

Conference Papers

- Derya Akbaba, Devin Lange, **Michael Correll**, Alexander Lex, and Miriah Meyer. Troubling Collaboration: Matters of Care for Visualization Design Study. *Proceedings of ACM CHI 2023*.

- Calvin Bao, Siyao Li, Sarah Flores, **Michael Correll**, and Leilani Battle. Recommendations for Visualization Recommendations: Exploring Preferences and Priorities in Public Health. *Proceedings of ACM CHI 2022*.
- Rachael Zehrung, Astha Singhal, **Michael Correll**, and Leilani Battle. Vis Ex Machina: An Analysis of Trust in Human versus Algorithmically Generated Visualization Recommendations. *Proceedings of ACM CHI 2021*.
- Tingting Liu, Xiaotong Li, Chen Bao, **Michael Correll**, Changehe Tu, Oliver Deussen, Yunhai Wang. Data-Driven Mark Orientation for Trend Estimation in Scatterplots. *Proceedings of ACM CHI 2021*.
- Anamaria Crisan, **Michael Correll**. User Ex Machina: Simulation as Design Probe in Human-in-the-Loop Text Analytics. *Proceedings of ACM CHI 2021*.
- Andrew McNutt, Gordon Kindlmann, and **Michael Correll**. Surfacing Visualization Mirages. *Proceedings of ACM CHI 2020*. (**Best Paper Honorable Mention**)
- **Michael Correll**, Enrico Bertini, and Steven Franconeri. Truncating the Y-Axis: Threat or Menace? *Proceedings of ACM CHI 2020*. (**Best Paper Honorable Mention**)
- **Michael Correll**. Ethical Implications of Visualization Research. *Proceedings of ACM CHI 2019*. (**Best Paper Honorable Mention**)
- **Michael Correll**, Dominik Moritz, and Jeffrey Heer. Value-Suppressing Uncertainty Palettes. *Proceedings of ACM CHI 2018*.
- **Michael Correll** and Jeffrey Heer. Regression by Eye: Estimating Trends in Bivariate Visualizations. *Proceedings of ACM CHI 2017*.
- **Michael Correll** and Michael Gleicher. The Semantics of Sketch: A Visual Query System for Time Series Data. *Proceedings of IEEE VAST 2016*.
- Danielle Albers, **Michael Correll**, and Michael Gleicher. Task-Driven Evaluation of Aggregation in Time Series Visualization. *Proceedings of ACM CHI 2014*.
- **Michael Correll**, Eric Alexander, and Michael Gleicher. Quantity Estimation in Visualizations of Tagged Text. *Proceedings of ACM CHI* 2013.
- **Michael Correll**, Danielle Albers, Steven Franconeri, and Michael Gleicher. Comparing Averages in Time Series Data. *Proceedings of ACM CHI* 2012.
- **Michael Correll**, Subhadip Ghosh, David O'Connor, and Michael Gleicher. Visualizing Virus Population Variability from Next Generation Sequencing Data. *IEEE Symposium on Biological Data Visualization (BioVis)*, 2011.

Journal Articles

- Vidya Setlur, **Michael Correll,** Arvind Satyanarayan, Melanie Tory. Heuristics for Supporting Cooperative Dashboard Design. *IEEE Transactions on Visualization and Computer Graphics*, 2023. (VIS 2023, to appear)

- **Michael Correll**. Teru Teru Bōzu: Defensive Raincloud Plots. *Computer Graphics Forum*. (EuroVis 2023)
- Eric Newburger, **Michael Correll**, Niklas Elmqvist. Fitting Bell Curves to Data Distributions Using Visualization. *IEEE Transactions on Visualization and Computer Graphics*, 2022.
- Vidya Setlur, **Michael Correll**, Sarah Battersby. OSCAR: A Semantic-based Data Binning Approach. *IEEE Transactions on Visualization and Computer Graphics*. (VIS 2022 Short Papers)
- Lyn Bartram, **Michael Correll**, Melanie Tory. Untidy Data: The Unreasonable Effectiveness of Tables. *IEEE Transactions on Visualization and Computer Graphics*. (VIS 2021)
- Dustin Fife, Gabrielle Longo, **Michael Correll**, Polly Termoulet. A Graph for Every Analysis: Mapping Visuals Onto Common Analyses Using Flexplot. *Behavior Research Methods*.
- Enrico Bertini, **Michael Correll**, and Steven Franconeri. Why Shouldn't All Charts Be Scatter Plots? Beyond Precision-Driven Visualizations. *IEEE Transactions on Visualization and Computer Graphics*. (VIS 2020 Short Papers)
- Aspen Hopkins, **Michael Correll** and Arvind Satyanarayan. VisuaLint: Sketchy *In Situ* Annotations of Chart Construction Errors. *Computer Graphics Forum*. (EuroVis 2020)
- Yunhai Wang, Zeyu Wang, Tingting Liu, **Michael Correll**, Zhanglin Cheng, Oliver Deussen and Michael Sedlmair. Improving the Robustness of Scagnostics. *IEEE Transactions on Visualization and Computer Graphics*. (VIS 2019)
- Younghoon Kim, **Michael Correll** and Jeffrey Heer. Designing Animated Transitions to Convey Aggregate Operations. *Computer Graphics Forum*. (EuroVis 2019)
- **Michael Correll**, Mingwei Li, Gordon Kindlmann, and Carlos Scheidegger. Looks Good To Me: Visualizations As Sanity Checks. *IEEE Transactions on Visualization and Computer Graphics*. (VIS 2018)
- Jessica Hullman, Xiaoli Qiao, **Michael Correll**, Alex Kale, and Matthew Kay. In Pursuit of Error: A Survey of Uncertainty Visualization Evaluation. *IEEE Transactions on Visualization and Computer Graphics*. (VIS 2018)
- Alper Sarikaya, **Michael Correll**, Lyn Bartram, Melanie Tory, and Danyel Fisher. What Do We Talk About When We Talk About Dashboards? *IEEE Transactions on Visualization and Computer Graphics*. (VIS 2018)
- **Michael Correll** and Jeffrey Heer. Surprise! Bayesian Weighting for De-Biasing Thematic Maps. *IEEE Transactions on Visualization and Computer Graphics*. (VIS 2016)
- Alper Sarikaya, **Michael Correll**, Jorge Dinis, David O'Connor, and Michael Gleicher. Visualizing Co-occurrence of Events in Populations of Viral Genome Sequences. *Computer Graphics Forum* Vol. 35 No. 3., 2016. (EuroVis 2016)

- **Michael Correll,** Adam L. Bailey, Alper Sarikaya, David H. O'Connor, and Michael Gleicher. LayerCake: a tool for the visual comparison of viral deep sequencing data. *Bioinformatics*, 2015.
- **Michael Correll** and Michael Gleicher. Error Bars Considered Harmful: Exploring Alternate Encodings for Mean and Error. *IEEE Transactions on Visualization and Computer Graphics*. (VIS 2014)
- Adam Bailey, Michael Lauck, Samuel Sibley, Jerilyn Pecotte, Geoffrey Weny, Alex Tumukunde, David Hyeroba, Justin Greene, **Michael Correll**, Michael Gleicher, Thomas Friedrich, Peter Jahrling, Jens Kuhn, Tony Goldberg, Jeffrey Rogers, and David O'Connor. Two Novel Simian Ateriviruses in Captive and Wild Baboons (Papio spp.). *Journal of Virology*, Vol. 88 No. 22, 2014.
- Adam Bailey, Michael Lauck, Andrea Weiler, Samuel Sibley, Jorge Dinis, Zachary Bergman, Chase Nelson, **Michael Correll**, Michael Gleicher, David Hyeroba, Alex Tumukunde, Geoffrey Weny, Colin Chapman, Jen Kuhns, Austin Hughes, Thomas Friedrich, Tony Goldberg, and David O'Connor. High Genetic Diversity and Adaptive Potential of Two Simian Hemorrhagic Fever Viruses in a Wild Primate Population. *PLoS One*, Vol. 9 No. 3, 2014.
- Michael Gleicher, **Michael Correll**, Christine Nothelfer, and Steven Franconeri. Perception of Average Value in Multiclass Scatterplots. *IEEE Transactions on Visualization and Computer Graphics,* Vol. 19 No. 12, 2013. (VIS 2013)
- Shelby O'Connor, Erica Becker, Jason Weinfurter, Emily Chin, Melisa Budde, Emma Gostick, **Michael Correll**, Michael Gleicher, Austin Hughes, David Price, Thomas Friedrich, and David O'Connor. Conditional CD8+ T Cell Escape During Acute Simian Immunodeficiency Virus Infection. *Journal of Virology* Vol. 86 No. 1, 2012.
- **Michael Correll**, Michael Witmore, and Michael Gleicher. Exploring Collections of Tagged Text for Literary Scholarship. *Computer Graphics Forum* Vol. 30 No. 3, 2011. (EuroVis 2011)

Patents

- Vidya Setlur, **Michael Correll**, and Sarah Battersby. Semantic-Based Binning of Data Values for Numeric Data Fields. US63400034 (Provisional)
- **Michael Correll** and Andrew McNutt. Surfacing Visualization Mirages. US11783266.

Thesis

- **Michael Correll**. Improving Visual Statistics. Committee: Michael Gleicher (Advisor), Steven Franconeri, Charles Franklin, Bilge Mutlu, Kevin Ponto, and Robert Roth. University of Wisconsin-Madison, 2015.

Workshop Papers

- **Michael Correll**. Are We Making Progress in Visualization Research? *BELIV 2022: Designing and Evaluating Visualizations for an Ethical, Inclusive, and Responsible Future*, 2022.
- **Michael Correll**. Towards a Theory of Bullshit Visualization. *alt.VIS*, 2021.
- Gerrit J Rijken, Rene Cutura, Frank Heyen, Michael Sedlmair, **Michael Correll**, Jason Dykes, Noeska Smit. Illegible Semantics: Exploring the Design Space of Metal Logos. *alt.VIS,* 2021.
- **Michael Correll**. What Can We Actually Learn from Evaluations in the "Heroic Era" of Visualization? *BELIV 2020: Evaluation and Beyond – Methodological Approaches for Visualization*, 2020.
- Xiaoying Pu, Matthew Kay, **Michael Correll**, and Eli Brown. Unbiasing Visual Data Exploration in the Garden of Forking Paths. *CHI 2019 Workshop on Human-Centered Study of Data Science Work Practices*, 2017.
- **Michael Correll** and Jeffrey Heer. Black Hat Visualization. *DECISIVe: Workshop on Dealing with Cognitive Biases in Visualisations*, 2017.
- **Michael Correll** and Michael Gleicher. Implicit Uncertainty Information: Aligning Perception and Statistics. *Visualization for decision making under certainty*, 2015.
- **Michael Correll** and Michael Gleicher. Bad for Data, Good for the Brain: Knowledge-First Axioms for Visualization Design. *DECISIVe: Workshop on Dealing with Cognitive Biases in Visualisations*, 2014.
- **Michael Correll**, Eric Alexander, Danielle Albers, Alper Sarikaya, and Michael Gleicher. Navigating Reductionism and Holism in Evaluation. *BELIV '14: Proceedings of the 2014 BELIV Workshop: Beyond Time and Errors – Novel Evaluation Methods for Visualization*, 2014.
- **Michael Correll** and Michael Gleicher. What Shakespeare Taught Us About Text Visualization. *2nd Workshop on Interactive Visual Text Analytics, IEEE Information Visualization Conference Workshop Proceedings,* 2012.

Refereed Abstracts

- **Michael Correll** and Heather Froehlich. Making Sense of the Sea of Dashboards. *Visualization for the Digital Humanities: Provocation Track* (Vis4DH)
- Andrew McNutt, Anamaria Crisan, and **Michael Correll**. Divining Insights: Visual Analytics Through Cartomancy. *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems*, 2020. (alt.CHI)
- **Michael Correll**. Ross-Chernoff Glyphs Or: How Do We Kill Bad Ideas in Visualization? *Extended Abstracts of the 2018 CHI Conference on Human Factors in Computing Systems*, 2018. (alt.CHI)
- Danielle Albers, **Michael Correll**, Michael Gleicher, and Steve Franconeri. Ensemble Processing of Color and Shape: Beyond Mean Judgments. *Journal of Vision* Vol. 14 No. 11, 2014.
- **Michael Correll** and Michael Gleicher. Error Bars Considered Harmful. *IEEE Information Visualization Conference Poster Proceedings*, 2013.
- **Michael Correll** and Michael Gleicher. Poster: Understanding Tagged Text. *IEEE Information Visualization Conference Poster Proceedings*, 2010.

Invited Talks

- "Visualization & Uncertainty: A Love/Hate Relationship", *Dagstuhl Seminar: Visualization and the Humanities: Towards a Shared Research Agenda*, 2023.
- "Avoiding Data Visualization Disasters", *SCI Seminar*, 2022.
- "Has Visualization Given Up?" Panel: *Opportunities Between AI and Visualization*, 2022.
- "Underthinking Uncertainty" *Dagstuhl Seminar: Visualization and Decision Making Under Uncertainty*, 2022.
- "Cautiously Constructing Charts" *Statistical Society of Canada Annual Meeting*, 2021.
- "Vis and Data Researchers During a Public Health Crisis" Panel: *IEEE VIS*, 2020.
- "Fireside Chat: Thoughts on Design Studies" Panel: *BELIV (IEEE VIS),* 2020.
- "Lies, Distortions, and Misrepresentations in Visualization" *Tableau Conference,* 2019.
- "Counting, Collaborating, and Coexisting: Visualization in the Digital Humanities" 4th *Workshop on Visualization for the Digital Humanities*, 2019.
- "Black Hat Visualization," *HCI Seminar,* University of Maryland, 2019.
- "Towards A General Theory of Visualization Weirdness" *Statistical Inference, Learning and Models in Data Science*. Fields Institute, 2018.

- "Why Visual Analytics Needs the Liberal Arts" *2018 Top 10 Business Intelligence Trends*, 2018.
- "Surprise! A Bayesian Technique for De-Biasing Thematic Maps" *Tableau Conference*, 2017.
- "Bias and Uncertainty in Information Visualization" *DUB Seminar*, University of Washington, 2017.

Awards

- IEEE VIS Doctoral Colloquium Fellowship (2013)
- Univ. of Wisc. - Madison Dept. of Comp. Sci. Summer Graduate Fellowship (2010)
- St. Mary's Senior Scholar (2009)
- St. Mary's College of Maryland Deans List (2005-2009)

Academic Service

- Organizing Committee, Open Practices Co-Chair, *IEEE VIS* (2023, 2024).
- Organizing Committee, Panels Co-Chair, *IEEE VIS* (2021, 2022).
- Organizing Committee, *Workshop on Visualization for the Digital Humanities (Vis4DH)* (2016, 2017, 2022, 2023).
- Organizing Committee, *BELIV* (2022).
- Organizing Committee, *Visualization for Social Good* (2019-2021).
- Organizing Committee, *alt.VIS* (2021).
- Organizing Committee, Publicity Co-Chair, *IEEE VIS* (2020).
- Organizing Committee, *Designing for Uncertainty in HCI: When Does Uncertainty Help?* (2017).
- Steering Committee, *Visualization for Social Good* (2022-2023).
- Steering Committee, *alt.VIS* (2023).
- Program Committee, *IEEE VIS* InfoVis (2018-2023).
- Program Committee, *EuroVis Short Papers* (2023).
- Program Committee, *EuroVA* (2014, 2016-2023).
- Program Committee, *Visualization for the Digital Humanities (Vis4DH)* (2018-2021).
- Program Committee, *BELIV* (2016, 2018, 2020).
- Program Committee, *Leipzig Symposium on Visualization in Applications* (2018-2020).
- Program Committee, *Workshop on Visualization Psychology* (2020).
- Program Committee, *DECISIVe* (2017).
- Panelist, National Science Foundation (2018, 2019).

- VIS Inclusivity and Diversity Scholarship Mentor, *IEEEVIS* (2019).
- Reviewer, ACM *CHI* (2015-2023).
- Reviewer, IEEE *TVCG* (2014-2023).
- Reviewer, IEEE *VIS/VisWeek* (2012-2022).
- Reviewer, *EuroVis* (2014-2023).
- Reviewer, *Harvard Data Science Review* (2021, 2022).
- Reviewer, *Journal of Vision* (2020, 2021).
- Reviewer, National Science Foundation (2020, 2021).
- Reviewer, *Computers & Graphics* (2018, 2020).
- Reviewer, *Information Visualization* (2016-2019).
- Reviewer, *Computer Graphics and Applications* (2019).
- Reviewer, *Graphics Interface* (2019).
- Reviewer, *The Visual Computer* (2017).
- Reviewer, *Education Assessment* (2015).
- Reviewer, *PNAS* (2014).

Professional Memberships

- ΦBK Honor Society
- Association for Computing Machinery (ACM)
- Institute of Electrical and Electronics Engineers (IEEE)