

Cindy Y. Xiong

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Education

2021	Northwestern University	Ph.D. in Psychology
2021	Northwestern University	M.S. in Statistics
2018	Northwestern University	M.S. in Psychology
2016	UCLA	B.S. in Applied Mathematics B.A. in Psychology (<i>minor: Environmental Engineering</i>)

Research Positions

2021 –	Assistant Professor, UMass Amherst, College of Information and Computer Sciences
2016 – 2021	Graduate Student, Northwestern Visual Thinking Lab Advisor: Steven Franconeri
2019	User Experience Researcher <i>Charting Visual Design Revolution, Graphics and Charting Image Processing, Signal Processing and Communications</i> The MathWorks
2015 – 2016	Research Assistant, UCLA Computational Vision and Learning Lab <i>Psychophysics, Computational Psychology Approach to Intuitive Physics</i> Advisor: Hongjing Lu
2013 – 2016	Research Assistant, UCLA Civil and Environmental Engineering Jay Lab <i>Antibiotic Resistance in Airborne Bacteria</i> Advisor: Jenny Jay
2012 – 2016	Research Assistant, UCLA Human Perception Lab <i>Perceptual Learning applied to Chemistry, Algebra & Music</i> Advisor: Phil Kellman

International Visiting and Development

2018	Visiting Scholar, Utrecht University, Utrecht, the Netherlands <i>Ambiguity in Graph Pattern Interpretation and Perspective Taking</i> Host: Lisanne van Weelden
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- 2018 Participant, Summer School on Computational and Mathematical Modeling of Cognition, Couches, France
Perceptual Anchoring of Inferences from Dual-axis Graphs
Advisor: **Casimir Ludwig**
- 2015 Research Assistant, Peking University, Beijing, China
Social Status and Its Relationship to Neural Responses to Fairness
Advisor: **Xiaolin Zhou**

Research Interests

Information Visualization, Data Communication, Decision Making, Visual Cognition

Publications

- Xiong, C.**, van Weelden, L., Waytz, A., & Franconeri, S. (in prep). Same Data, Diverging Decisions: Visualizations Can Elicit Competing Interpretations.
- Xiong, C.**, Stokes, C., Kim, Y., & Franconeri, S. (submitted). Belief Biases Correlation Estimation.
- Stokes., C., **Xiong, C.**, & Franconeri, S. (submitted) Dot, Line, and Intensity Plots Can Afford Different Viewer Conclusions.
- Xiong, C.**, Sarvghad, A., Goldstein, D., Hofman, J., & Demiralp, C. (submitted) Investigating Perceptual Biases in Icon Arrays.
- Xiong, C.**, Lee, E., Zhang, I., Gaba, A., & Franconeri, S. (submitted). You Can't Escape Confirmation Bias with Visualizations, And You Can Reason Better with Tables.
- Xiong, C.**, Stokes, Lovett, A., C., Franconeri, S. (submitted). What Does the Graph Say: Grouping Cues Guide Viewer Conclusions in Visualizations.
- Yang, L. **Xiong, C.**, Wong, K., Wu, A., Qu, H. (submitted). Explaining with Examples: Lessons Learned from Crowdsourced Introductory Description of Information Visualizations.
- Xiong., C.**, Setlur, V., Bach, B., Lin, K., Koh, E., & Franconeri, S. (2021) Visual Arrangements of Bar Charts Influence Comparisons in Viewer Takeaways. *IEEE Transactions on Visualization and Computer Graphics*, Vis 2021.
- Burns, A., **Xiong, C.**, Franconeri, Cairo, A., S., Mahyar, N. (2021). Designing with Pictographs: Envision Topics without Sacrificing Depth of Understanding. *IEEE Transactions on Visualization and Computer Graphics*, 2021. DOI: 10.1109/TVCG.2021.3092680
- Ajani, K., Lee, E., **Xiong, C.**, Knaflic, C. N., Kemper, W., Franconeri, S. (2021). Declutter and Focus: Empirically Evaluating Design Guidelines for Effective Data Storytelling.

Ceja, C., McColeman, C., **Xiong, C.**, Franconeri, S. (2020). Truth or Square: Aspect Ratio Biases Recall of Position Encodings. *IEEE Transactions on Visualization and Computer Graphics, InfoVis 2020*.

Elliott M., Nothelfer, C., **Xiong, C.**, Albers Szafir, D. (2020). A Design Space of Vision Science Methods for Visualization Research. *IEEE Transactions on Visualization and Computer Graphics, InfoVis 2020*. *Honourable Mention (Top 5 Papers)

Xiong, C., van Weelden, L., Waytz, A., & Franconeri, S. (2020). Same Graph, Different Conclusions: Perceptual Salience Drives Data Interpretation and Decision Making. *Proceedings to Society for Consumer Psychology, Huntington Beach, CA, 2020*.

Xiong, C., Shapiro, J., Hullman, J., & Franconeri, S. (2019). Illusion of Causality in Visualized Data. *IEEE Transactions on Visualization and Computer Graphics, InfoVis, 2019*. DOI: 10.1109/TVCG.2019.2934399

Xiong, C., Ceja, C., Ludwig, C., & Franconeri, S. (2019). Biased Average Position Estimates in Line and Bar Graphs: Underestimation, Overestimation, and Perceptual Pull. *IEEE Transactions on Visualization and Computer Graphics, InfoVis*. DOI: 10.1109/TVCG.2019.2934400

Xiong, C., van Weelden, L., & Franconeri, S. (2019). The Curse of Knowledge in Data Visualizations. *IEEE Transactions on Visualization and Computer Graphics*. doi: 10.1109/TVCG.2019.2917689

Bufford, C. A., Thai, K. P., Ho, J., **Xiong, C.**, Hines, C. A., & Kellman, P. J. (2016). Perceptual learning of abstract musical patterns: Recognizing composer style. *Proceedings of the 14th Annual Conference of the International Conference for Music Perception and Cognition* (pp. 8-12).

Refereed Workshop Papers

Ceja, C., & **Xiong, C.** (2021). Show or Tell? Visual and Verbal Representations Bias Position Recall. *IEEE Vis VISxVISION Workshop, 2021*.

Burns, A., **Xiong, C.**, Franconeri, Cairo, A., S., Mahyar, N. (2020). How to Evaluate Data Visualizations across Different Levels of Understanding. *IEEE Vis BELIV Workshop, 2020*.

Xiong, C. (2019). Visualization Design to Afford Critical Thinking about Data. *IEEE Transactions on Visualization and Computer Graphics, Doctoral Colloquium 2019*, Vancouver, Canada.

Xiong, C., Padilla, L., Grayson, K., Franconeri, S. (2019). Examining the Components of Trust in Map-Based Visualizations. *EuroVis Workshop on Trustworthy Visualization (TrustVis) 2019*, Portal, Portugal.

Xiong, C., van Weelden, L., & Franconeri, S., (2017). The Curse of Knowledge in Visual Data Communication. *IEEE Transactions on Visualization and Computer Graphics, InfoVis DECISIVE Workshop 2017*, Phoenix, Arizona.

Conference Talks

Xiong, C., Setlur, V., Bach, B., Lin, K., Koh, E., & Franconeri, S. (2021) Visual Arrangements of Bar Charts Influence Comparisons in Viewer Takeaways. *IEEE Transactions on Visualization and Computer Graphics, Vis 2021*.

Xiong, C., Stokes, C., Kim, Y., Franconeri, S. (2020) See What You Want: Belief Biases Correlation Estimations. *OPAM 2020*.

Xiong, C., van Weelden, L., Waytz, A., & Franconeri, S. (2020). Same Graph, Different Conclusions: Perceptual Salience Drives Data Interpretation and Decision Making. *Society for Consumer Psychology*.

Xiong, C., (2019). Visualization Design to Afford Critical Thinking about Data. *IEEE Transactions on Visualization and Computer Graphics, InfoVis 2019*, Vancouver, Canada.

Xiong, C., Ceja, C., Ludwig, C., & Franconeri, S. (2019). Biased Average Position Estimates in Line and Bar Graphs: Underestimation, Overestimation, and Perceptual Pull. *IEEE Transactions on Visualization and Computer Graphics, InfoVis 2019*, Vancouver, Canada.

Xiong, C., Shapiro, J., Hullman, J., & Franconeri, S. (2019). Illusion of Causality in Visualized Data. *IEEE Transactions on Visualization and Computer Graphics, InfoVis 2019*, Vancouver, Canada.

Xiong, C., van Weelden, L., & Franconeri, S., (2019). The Curse of Knowledge in Data Visualizations. *IEEE Transactions on Visualization and Computer Graphics, InfoVis 2019*, Vancouver, Canada.

Xiong, C., van Weelden, L., & Franconeri, S., (2017). The Power of Top-Down Salience in Data Visualizations. Talk at *OPAM 2017*, Vancouver, Canada.

Xiong, C., van Weelden, L., & Franconeri, S., (2017). The Curse of Knowledge in Visual Data Communication. Talk at *IEEE Transactions on Visualization and Computer Graphics, InfoVis DECISIVE Workshop 2017*, Phoenix, Arizona.

Xiong, C., Kubricht, J., Lu, H. (2016). A Computational Investigation into Intuitive Physics for Colliding Objects. Talk at the 16th *Annual Stanford Undergraduate Psychology Conference*, Palo Alto, CA, USA.

Conference Panels and Symposiums

Elliott M., Bylinskii, Z., Nothelfer, C., **Xiong, C.**, Albers Szafir, D. (2019) Vis X Vision: Workshop on Novel Directions in Vision Science and Visualization Research at *IEEE Transactions on Visualization and Computer Graphics, InfoVis*, Vancouver, Canada.

Xiong, C., Bylinskii, Z., Elliott M., Nothelfer, C., Albers Szafir, D. (2019) VISxVISION Workshop: Novel Vision Science Research Directions in Visualization at *Vision Sciences Society Annual Meeting 2019 May*, St. Pete Beach, Florida.

Elliott M., Bylinskii, Z., Nothelfer, C., **Xiong, C.**, Albers Szafir, D. (2018). Visualization Meets Vision Science. Meetup at *IEEE Transactions on Visualization and Computer Graphics, InfoVis*, Berlin, Germany.

Nothelfer, C., Elliott M., Bylinskii, Z., **Xiong, C.**, Albers Szafir, D. (2018). Vision and Visualization: Inspiring novel research directions in vision science. Symposium organized at *Vision Sciences Society Annual Meeting 2018 May*, St. Pete Beach, Florida

Nothelfer, C., Bylinskii, Z., Elliott, M., **Xiong, C.**, & Szafir, D.A. (2017) Vision Science Meets Visualization. Panel organized at *IEEE Transactions on Visualization and Computer Graphics, InfoVis*, Phoenix, Arizona.

Elliott, M., Nothelfer, C., & **Xiong, C.** (2017). VSSxVIS: Information Visualization Research. Panel organized at *Vision Sciences Society Annual Meeting 2017 May*, St. Pete Beach, Florida.

Refereed Poster Presentations

Ceja, C., & **Xiong, C.** (2021). Show or Tell? Visual and Verbal Representations Bias Position Recall. *IEEE Transactions on Visualization and Computer Graphics*, 2021.

Xiong, C., Stokes, C., Franconeri, S. (2021). Visual Salience and Grouping Cues Guide Relation Perception in Visual Data Displays. Poster presented at *Vision Sciences Society Annual Meeting 2021*.

Xiong, C., van Weelden, L., & Franconeri, S. (2019). Same Data, Diverging Conclusions: Perceptual Salience Drives Data Interpretation. *Psychonomics*, 2019, Montreal, Canada. [***Graduate Travel Award**]

Xiong, C., Ceja, C., Ludwig, C., & Franconeri, S. L. (2019). Position Estimation Illusions in Visualized Data: Underestimation, Overestimation and Perceptual Pull. *OPAM*, 2019, Montreal, Canada.

Xiong, C., Lee, E., & Franconeri, S. (2019). Confirmation Bias in Graphical Displays. *Society for Judgment and Decision Making*, 2019, Montreal, Canada.

Ceja, C., McColeman, C., **Xiong, C.**, & Franconeri, S. (2019). Position Estimates in Bar Graphs: Error and Bias. *IEEE Transactions on Visualization and Computer Graphics*, InfoVis 2019, Vancouver, Canada.

Xiong, C., Ceja, C., Ludwig, C., & Franconeri, S. L. (2019). Attraction and Response Probe Similarity Effects in a Multiple Ensemble Judgment Task. Poster presented at *Vision Sciences Society Annual Meeting 2019 May*, St. Pete Beach, Florida.

Lee, J., **Xiong, C.**, Ceja, C., & Franconeri, S. L. (2019). Perceptual Bias in Object Position Estimates in Data Visualization. Poster presented at the *28th UCLA Psychology Undergraduate Research Conference*, Los Angeles CA, USA.

Lin, K., Salovich, N. A., **Xiong, C.**, Franconeri, S. L., & Rapp, D. N. (April, 2019). Controversial Topics Increase Skepticism of Data Visualizations. Presented at the annual *Chicago Area Undergraduate Research Symposium*, Chicago, IL, USA.

Xiong, C., Ludwig, C., Ceja, C., & Franconeri, S. (2018). Perceptual Anchoring of Inferences from Dual-axis Graphs. Presentation given at the *Fifth European Summer School on Computational and Mathematical Modeling of Cognition 2018 July*, Couches, France.

Xiong, C., Ceja, C., Lee, J., Franconeri, S. (2018). Perceptual Anchoring of Graph Element Positions in Dual-Axis Graphs. Poster presented at *Fifth European Summer School on Computational and Mathematical Modeling of Cognition 2018 July*, Couches, France.

Xiong, C., van Weelden, L., & Franconeri, S., (2017). Graphs as Ambiguous Figures. Poster presented at *Vision Sciences Society Annual Meeting 2018 May*, St. Pete Beach, Florida.

Xiong, C., van Weelden, L., & Franconeri, S., (2017). The curse of knowledge in visual data communication. *IEEE Transactions on Visualization and Computer Graphics, InfoVis 2017*, Phoenix, Arizona. [***Best Poster Honourable Mention**]

Hines, C.A., Ho, J., **Xiong, C.**, Bufford, C. A., Thai, K. P., & Kellman, P. J. (2016). Perceptual learning intervention improved abstract musical pattern recognition. Poster presented at the 25th *UCLA Psychology Undergraduate Research Conference*, Los Angeles CA, USA.

Ho, J., **Xiong, C.**, Bufford, C. A., Thai, K. P., & Kellman, P. J. (2015). Perceptual Learning of Musical Abstract Patterns. Poster Presentation at the *Berkeley Interdisciplinary Research Conference for Undergraduates*, Berkeley, CA, USA.

Teaching Experience

Lecturer

2022 Winter	Intro to UX Research	UMass Amherst
2020 Fall	Decision Making	Northwestern University

Teaching Assistant

2019 Fall	Developmental Psychology	Northwestern University
2017 Fall	Developmental Psychology	Northwestern University
2017 Spring	Decision Making	Northwestern University
2017 Winter	Brain Damage and the Mind	Northwestern University
2015 Winter	Introduction to Psychology	UCLA

Grants and Fellowships

2020	Northwestern University Career Development Grant
2019	Psychonomics Society Graduate Travel Grant
2019	IEEE Doctoral Colloquium Fellowship
2019	Northwestern Cognitive Science Travel Grant
2018, 2019	Northwestern TGS Conference Travel Grant
2018 – 2019	Northwestern Segal Design Research Fellowship
2018	Northwestern Psychology Summer Workshop Travel Grant
2017 – 2018	Northwestern Cognitive Science Advanced Fellowship
2016 – 2017	Northwestern Cognitive Science Fellowship

Invited Talks

2021 Aug	Southern California People Analytics Meetup	Virtual
2021 Jun	Conference on Computer Vision and Pattern Recognition CQA Workshop	Virtual
2021 Feb	Yale Behavioral Finance Reading Group	Virtual
2020 Jun	National Bureau of Economic Research	Virtual
2020 Apr	University of Massachusetts, Amherst	Amherst, MA
2020 Feb	Microsoft Research	New York City, NY
2020 Jan	University of Michigan, Ann Arbor	Ann Arbor, MI
2019 Nov	University of Massachusetts, Amherst	Amherst, MA

2019 Nov	University of Massachusetts, Boston	Boston, MA
2019 Nov	Wellesley College	Wellesley, MA
2019 Nov	Northeastern University	Boston, MA
2019 Nov	University Washington	Seattle, WA
2019 Oct	Tableau	Seattle, WA
2019 Oct	University of British Columbia	Vancouver, Canada
2019 Oct	Columbia University	New York City, NY
2019 Oct	New York University	New York City, NY
2019 Sept	Brown University	Providence, RI
2019 Aug	Tufts University	Medford, MA
2019 July	The MathWorks	Natick, MA
2019 June	Northwestern University Design Cluster	Evanston, IL
2019 Mar	Northwestern University Kellogg School of Management	Evanston, IL
2018 Nov	Northwestern University R User Group	Evanston, IL
2018 Feb	Northwestern University HCI Group	Evanston, IL

Professional Services

Academic

2017 -	Co-Founder and Organizer, VISxVISION initiative (visxvision.com)
2020	Reviewer, Cognitive Science Society (1)
2019	Publication Volunteer, VIS 2019 Workshop on Vis X Vision at IEEE InfoVis, 2019
2019	Reviewer, ACM CHI: Human Factors in Computing Systems 2020 Conference (2)
2019	Co-Chair, VIS 2019 Workshop on Vis X Vision at IEEE InfoVis, 2019
2019	Advisory Group, Journal of Vision, <i>Special Issue on Visualization</i>
2019	Organizer, VSS 2019 Workshop on Vis X Vision at Vision Science Society, 2019
2019	Reviewer, IEEE InfoVis 2019 Conference (4)
2018	Reviewer, ACM CHI: Human Factors in Computing Systems 2019 Conference (1)
2018	Reviewer, IEEE InfoVis 2018 Conference (3)
2018	Organizer, VSS 2018 Symposium <i>Inspiring Novel Research Directions in Vision Science</i>
2018	Organizer, IEEE InfoVis 2018 <i>Visualization Meets Vision Science Meetup</i>
2017	Organizer, IEEE InfoVis 2017 <i>Visualization Meets Vision Science Panel</i>
2017	Organizer, VSS 2017 <i>Information Visualization Research Panel</i>
2018 – 2019	Brownbag Coordinator, Department of Psychology Northwestern University
2016 – 2017	Editor, UCLA <i>The Undergraduate Research Journal of Psychology</i> , Spring 2016 Issue

Outreach

2019	Panelist, Northwestern University Graduate Diversity and Inclusion Committee, <i>Navigating Your Advisor</i>
2017 – 2019	Mentor, Northwestern Psychology Graduate Student Mentorship Program
2017	Application Reviewer, Sneak Peek Program, Northwestern University
2016 – 2018	Science Fundraiser Volunteer, Illinois Science Council
2018	Coordinator, Northwestern Department of Psychology Prospective Visit
2015 – 2016	Committee Member: UCLA Common Book Committee

Grant Reviewing

Ad-hoc Reviewer, NSF Decision, Risk and Management Sciences

Graduate Students Mentored

2021 – Aimen Gaba

2021 – Prateek Mantri
2021 – Hamza Elhamdadi

Undergraduate Students Mentored

2020 – Kylie Lin
2020 – 2021 Meghna Jain
2017 – 2021 Chase Stokes
2019 – 2020 Gabriel Belkind-Gerson
2017 – 2020 Jun Lee
2017 – 2018 Emily Manheimer
2017 – 2018 Chase Bednarz

Language Proficiency

English	Native
Chinese (Mandarin)	Native
Japanese	Business Proficient