

# Judith E. Fan

Assistant Professor  
Department of Psychology  
University of California, San Diego  
La Jolla, CA 92093 U.S.A.

email: [jefan@ucsd.edu](mailto:jefan@ucsd.edu)

URL: <https://cogtoolslab.github.io>

## Academic Positions

2019 — *Assistant Professor*, Psychology, University of California, San Diego  
*Affiliated Faculty*, Neurosciences Graduate Program, Halıcıoğlu Data Science  
Institute, The Design Lab, Computational Social Sciences Program  
2017-2019 *Postdoctoral Scholar*, Psychology, Stanford University  
2016 *Postdoctoral Research Associate*, Neuroscience Institute, Princeton University

## Education

2011-2016 *PhD*, Psychology, Princeton University  
2006-2010 *AB*, Neurobiology and Statistics, Harvard College  
*summa cum laude*

## Academic Honors

2017 Robert J. Glushko Prize for Outstanding Doctoral Dissertation, Cognitive Science Society  
2017 Finalist for the NIH Director's Early Independence Award  
2015 Computational Modeling Paper Prize in Perception & Action, Cognitive Science Society  
2013 Early Graduate Student Researcher Award, American Psychological Association  
2013 Object Perception, Attention, and Memory (OPAM) Student Travel Award  
2011-2012 Walker McKinney '50 Life Sciences Fellowship, Princeton University  
2009 Phi Beta Kappa, Harvard University  
2007-2008 John Harvard Scholar, Harvard University (top 5% of class)  
2006-2007 Harvard College Scholar, Harvard University (top 10% of class)  
2006 Presidential Scholar, U.S. Department of Education (1 of 2 selected from state)

## Fellowships & Grants

2015-2016	Council of the Humanities David A. Gardner '69 Magic Project Grant, Princeton University
2015-2016	Council on Science and Technology Research Grant, Princeton University
2015-2016	Cognitive Science Graduate Student Fellowship, Princeton University
2015-2016	Cognitive Science Graduate Research Grant, Princeton University
2013-2016	Graduate Research Fellowship, National Science Foundation
2011-2012	Andrew W. Mellon Foundation Research Fellowship in Cultural Policy, Princeton University
2010-2011	Michael C. Rockefeller Foundation Memorial Fellowship, Harvard University
2009	Mary G. Roberts Mind/Brain/Behavior Thesis Fellowship, Harvard University
2009	Program for Research in Science and Engineering Fellowship, Harvard University
2008	Weissman International Internship Program Fellowship, Harvard University
2008	Lowe Career Decision Loan Fund Recipient, Harvard University
2007	Museum of Comparative Zoology Grants-in-Aid Recipient, Harvard University
2007-2009	Harvard College Research Program Fellowship, Harvard University
2006-2010	T.W. Lewis Foundation Scholar
2006-2010	Robert C. Byrd Scholar

## Publications

2020	McCarthy W., Kirsh D., & <b>Fan J.</b> (2020). Learning to build physical structures better over time. <i>Proceedings of the 42nd Annual Meeting of the Cognitive Science Society</i> .
2020	<b>Fan J.</b> , Wammes J., Gunn J., Yamins D., Norman K., Turk-Browne N. (2020). Relating visual production and recognition of objects in human visual cortex. <i>Journal of Neuroscience</i> .
2019	<b>Fan J.</b> , Hawkins R., Wu M., & Goodman N. (2019). Pragmatic inference and visual abstraction enable contextual flexibility during visual communication. <i>Computational Brain &amp; Behavior</i> .
2019	Achlioptas, P., <b>Fan J.</b> , Hawkins R., Guibas L., & Goodman N. (2019). GeoGlot: Learning to Ground Referential Language in Geometry. <i>International Conference on Computer Vision (ICCV)</i> .
2019	Hawkins R.*, Sano, M.*, Goodman N., & <b>Fan J.</b> (2019). Graphical convention formation during visual communication. <i>Proceedings of the 41st Annual Meeting of the Cognitive Science Society</i> .
2019	Mukherjee K., Hawkins R., & <b>Fan J.</b> (2019). Communicating semantic part information in drawings. <i>Proceedings of the 41st Annual Meeting of the Cognitive Science Society</i> .
2019	Long B., <b>Fan J.</b> , Chai R., & Frank M. (2019). Developmental changes in the ability to draw distinctive features of object categories. <i>Proceedings of the 41st Annual Meeting of the Cognitive Science Society</i> .
2019	<b>Fan J.</b> , Dinculescu M., & Ha D. (2019). Collabdraw: An environment for collaborative sketching with an artificial agent. <i>Proceedings of the 2019 ACM SIGCHI Conference on Creativity and Cognition</i> .

- 2018 Cullen S., **Fan J.**, van der Brugge E., & Elga A. (2018). Improving analytical reasoning and argument understanding: A quasi-experimental field study of argument visualization. *npj Science of Learning*.
- 2018 **Fan J.**, Yamins D., & Turk-Browne, N. (2018) Common object representations for visual production and recognition. *Cognitive Science*.
- 2018 Long, B., **Fan J.**, & Frank M. (2018) Drawing as a window into developmental changes in object representations. *Proceedings of the 40th Annual Conference of the Cognitive Science Society*.
- 2016 **Fan J.**, Hutchinson, J., and Turk-Browne, N. (2016) When past is present: Substitutions of long-term memory for sensory evidence in perceptual judgments. *Journal of Vision*. 16(8), 1-12.
- 2016 **Fan J.** and Turk-Browne, N. (2016) Incidental biasing of attention from long-term memory. *Journal of Experimental Psychology: Learning, Memory, & Cognition*. 42(6), 970-977.
- 2016 **Fan J.**, Turk-Browne, N., & Taylor, J. (2016) Error-driven learning in statistical summary perception. *Journal of Experimental Psychology: Human Perception and Performance*, 42(2), 266-280.
- 2015 **Fan J.**, Yamins D., & Turk-Browne, N. (2015) Common object representations for visual recognition and production. *Proceedings of the 37th Annual Meeting of the Cognitive Science Society*.
- 2015 **Fan J.** (2015) Drawing to learn: how producing graphical representations enhances scientific thinking. *Translational Issues in Psychological Science*. 1(2), 170-181.
- 2014 **Fan J.** and Suchow, J. (2014) The crowd is self-aware. *Behavioral and Brain Sciences*, 37(1), 81-82.
- 2013 **Fan J.** and Turk-Browne, N. (2013) Internal attention to features in visual short-term memory guides object learning. *Cognition*, 129(2), 292-308.
- 2013 **Fan J.**, Turk-Browne, N., & Taylor, J. (2013) Feedback-driven tuning of statistical summary representations. *Visual Cognition*, 21(6), 685-689.
- 2013 **Fan J.** (2013) Can ideas about food inspire real social change? The case of Peruvian gastronomy. *Gastronomica*, 13(2), 31-42.
- 2010 Strange B., Kroes M., **Fan J.**, & Dolan R. (2010) Emotion causes targeted forgetting of established memories. *Frontiers in Behavioral Neuroscience*. 4, 1-13.
- 2009 Sharot T., Shiner T. Brown A., **Fan J.**, & Dolan, R. (2009) Dopamine enhances expectation of pleasure in humans. *Current Biology*, 24(19), 2077-1080.

## Invited Colloquia

- 2019 Cognitive tools for learning and communication.  
*Design @ Large, UC San Diego, La Jolla, CA, May 2019.*
- 2019 Cognitive tools for learning and communication.  
*Halcioğlu Data Science Institute, UC San Diego, La Jolla, CA, January 2019.*
- 2018 Cognitive tools for learning and communication.  
*Hult International Business School, San Francisco, CA, April 2018.*

- 2018 Drawing as a window into the mind.  
*Netflix, Los Gatos, CA, April 2018.*
- 2018 Cognitive tools for learning and communication.  
*University of California Berkeley, Berkeley, CA, February 2018.*
- 2018 Cognitive tools for learning and communication.  
*University of California San Diego, La Jolla, CA, January 2018.*
- 2018 Cognitive tools for learning and communication.  
*Indiana University, Bloomington, IN, January 2018.*
- 2017 Drawing as a window into the mind.  
*Rhode Island School of Design, Providence, RI, November 2017.*
- 2017 Role of cognitive actions in learning.  
*Annual Meeting of the Cognitive Science Society, London, UK, July 2017.*
- 2016 Drawing as a window into the mind.  
*Princeton University Art Museum, Princeton, NJ, October 2016.*
- 2016 Drawing as cognitive technology.  
*Drawing and the Brain Symposium, Indiana University Center for Art + Design, Bloomington, IN, April 2016.*
- 2016 Drawing to learn: how visual production refines object representations.  
*Indiana University in Bloomington, IN, April 2016.*
- 2015 Drawing as a window into learning.  
*Educational Testing Service, Princeton, NJ, October, 2015.*
- 2015 Common object representations for visual recognition and production.  
*University of British Columbia, Vancouver, BC, March, 2015.*
- 2015 Drawing as a window into the mind.  
*Smart Design, New York City, NY, March, 2015.*
- 2013 Can ideas about food lead to real social change?  
*Princeton Woodrow Wilson School Bernstein Gallery Art Exhibit on "Cooking for Change", Princeton, NJ, May 2013.*
- 2011 Apégate a la causa! La gastronomía peruana como fenómeno social total.  
*Faculty of Social Sciences, Pontificia Universidad Católica del Perú, Lima, Peru, July 2011.*

## Selected Conference Presentations

- 2019 Fan J. & Hawkins R. (2019). Visual content and social context jointly determine pictorial meaning. Poster presented at the Society for Philosophy and Psychology Annual Meeting.
- 2019 Fan J., Dinculescu M., & Ha D. (2019). collabdraw: an environment for collaborative sketching with an artificial agent. Poster presented at the 2019 ACM SIGCHI Conference on Creativity and Cognition.
- 2019 Hawkins R.\*, Sano, M.\*, Goodman N., Fan J. (2019). Graphical convention formation during visual communication. Talk presented at the 41st Annual Meeting of the Cognitive Science Society. \* equal contribution; Sayan Gul Travel Award

- 2019 Mukherjee K., Hawkins R., & Fan J. (2019). Communicating semantic part information in drawings. Poster presented at the 41st Annual Meeting of the Cognitive Science Society.
- 2019 Long B., Fan J., Chai R., & Frank M. (2019). Developmental changes in the ability to draw distinctive features of object categories. Talk presented at the 41st Annual Meeting of the Cognitive Science Society.
- 2018 Fan J., Hawkins R., Wu M., & Goodman, N. Modeling contextual flexibility in visual communication. Talk presented at the Vision Sciences Society Annual Meeting in St. Pete's Beach, FL May 2018.
- 2018 Long, B., Fan J., & Frank, M. Drawing as a window in the development of object category representations. Talk presented at the Cognitive Science Society Annual Meeting in Madison, WI July 2018.
- 2018 Long, B., Fan J., & Frank, M. Drawing as a window in the development of object category representations. Poster presented at the Vision Sciences Society Annual Meeting in St. Pete's Beach, FL May 2018.
- 2018 Wammes, J., Fan, J., Lee R., Gunn J., Yamins, D. Norman K., & Turk-Browne, N. Changing object representations during visual production training. Poster presented at the Vision Sciences Society Annual Meeting in St. Pete's Beach, FL May 2018.
- 2017 Fan J., Yamins D., & Norman, K., & Turk-Browne, N. Consequences of visual production on object representations. Dynamic poster to be presented at the Society for Neuroscience Annual Meeting in Washington, DC, November, 2017.
- 2017 Fan J., Yamins D., & Turk-Browne, N. Visual production induces categorical perception. Poster presented at the Vision Sciences Society Annual Meeting in St. Pete's Beach, FL May 2017.
- 2016 Fan J., Yamins D., & Turk-Browne, N. Dynamic visual feedback is sufficient to improve drawing. Poster presented at the Vision Sciences Society Annual Meeting in St. Pete's Beach, FL May 2016.
- 2015 Fan J., Yamins D., & Turk-Browne, N. Common object representations for visual recognition and production. Talk given at Cognitive Science Society Annual Meeting in Pasadena, CA July 2015. \* *Computational Modeling Paper Prize in Perception & Action*
- 2015 Fan J., Yamins D., & Turk-Browne, N. How drawing alters object representations. Poster presented at the Vision Sciences Society Annual Meeting in St. Pete's Beach, FL May 2015.
- 2014 Fan J., Yamins D., DiCarlo, J., & Turk-Browne, N. Mapping core similarity among visual objects across image modalities. Poster presented at ACM SIGGRAPH 2014 in Vancouver, BC, Canada, August 2014.
- 2014 Fan J. & Turk-Browne, N. Feature distributions constrain object perception. Poster presented at the Vision Sciences Society Annual Meeting in St. Pete's Beach, FL, May 2014.
- 2014 Everaert, J., Fan, J., Koster, E., & Turk-Browne, N. Attentional capture from emotional associations in long-term memory. Poster presented at the Vision Sciences Society Annual Meeting in St. Pete's Beach, FL, May 2014.
- 2013 Fan, J., Turk-Browne, N., & Taylor, J. Feedback-driven tuning of statistical summary representations. Talk given at the Annual Meeting on Object Perception, Attention, and Memory in Toronto, Ontario, Canada, November 2013. \* *Student Travel Award*

- 2013 Fan, J., Hutchinson, J., & Turk-Browne, N. Incidental expression of visual long-term memory in online perception. Poster presented at the Annual Meeting of the Psychonomic Society in Toronto, Ontario, Canada, November 2013.
- 2013 Fan, J. and Turk-Browne, N. Visual long-term memory for objects biases perceptual attention. Poster presented at the Vision Sciences Society Annual Meeting in Naples, FL, May 2013.
- 2012 Fan, J. and Turk-Browne, N. Accessing visual memory distorts object representations. Talk given at the Vision Sciences Society Annual Meeting in Naples, FL, May 2012.
- 2012 Fan, J. Bridging intercultural difference through the revaluation of pluralism in Peruvian gastronomic discourse. Conference paper presented at the New School for Social Research Sociology Conference in New York City, NY, March 2012.
- 2010 Fan, J. and Alvarez G. Online probing of working memory increases precision but at the cost of a systematic bias. Poster presented at the Vision Sciences Society Annual Meeting in Naples, FL, May 2010.

## Advising

### STUDENTS

#### UC San Diego

##### *Advisor*

Haoliang Wang (PhD, 2019 —)

Holly Huey (PhD, 2019 —, co-advised by Caren Walker)

Will McCarthy (PhD, 2019 —, co-advised by David Kirsh)

Sebastian Holt (PhD, 2019 —, co-advised by Dave Barner)

Tone Xu (PhD, 2020 —, co-advised by Steven Dow)

##### *Qualifying Exam Committee*

Lauren Oey (2020)

Erik Brockbank (2020)

#### Stanford

Renata Chai (Master's, Stanford, 2018-19), Xin Yuan (Master's, Tsinghua University, 2018-19), Kushin Mukherjee (undergraduate, Vassar, 2018-19), Megumi Sano (undergraduate, Stanford, 2018-19), Karl Mulligan (undergraduate, Rutgers, 2017)

#### Princeton

Laura Herman (undergraduate, Princeton, 2015-16), Jessica Ji (undergraduate, Princeton, 2016), Jordan Gunn (undergraduate, Princeton, 2015), Rachel Klebanov (undergraduate, Princeton,

2015), Ryan O’Connell (undergraduate, Princeton, 2013-14), Annie Chen (undergraduate, Carnegie Mellon, 2013), Max Luo (undergraduate, University of Pennsylvania, 2012–2013)

#### APPOINTMENTS

2017-2018	Stanford Center for the Study of Language & Information, Mentor
2012–2016	Princeton Wilson College, Resident Graduate Advisor
2015-2016	Princeton Cognitive Science Program Graduate Student Fellow
2013-2014	Princeton Psychology Senior Thesis Writing Group Leader

## Teaching

#### UC SAN DIEGO

##### Instructor-of-Record

2021	PSYC 60: Introduction to Statistics, Instructor
2021	PSYC 230: Computational Approaches to Visual Abstraction, Instructor
2020	PSYC 193: Perception & Computation, Instructor
2020	PSYC 60: Introduction to Statistics, Instructor
2019	PSYC 272: Computational Approaches to Visual Abstraction, Instructor

#### Guest Lectures

2020	NEU 200C: Basic Neuroscience
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#### PRINCETON

2014	PSY 101: Introduction to Psychology, Lab Course Developer
2013	PSY 101: Introduction to Psychology, Assistant-in-Instruction

## Professional Service

#### SERVICE TO THE UNIVERSITY

##### UC San Diego

2020	Marshall College Commencement Representative
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## Princeton

2014-15	Graduate Professional Development Committee, Co-Founder
2013-15	Colloquium Committee Cognitive Area Representative
2012-2014	Visiting Day for Prospective Graduate Students, Organizer

## SERVICE TO THE FIELD

2020	Program Committee, ICML Object-Oriented Learning Workshop
2020	Awards Committee, Cognitive Science Society
2020	Program Committee, Cognitive Science Society
2019	CogSci Society Annual Meeting: Faculty Mentor

## AD HOC REVIEWER

Cognition

Cognitive Research: Principles and Implications

Cognitive Science

Gastronomica

Journal of Experimental Psychology: General

Journal of Experimental Psychology: Human Perception and Performance

MIT Handbook of Attention

Psychonomic Bulletin & Review

Psychological Review

Quarterly Journal of Experimental Psychology

Translational Issues in Psychological Science

## AFFILIATIONS

Association for Computing Machinery (2019–), Cognitive Science Society (2015–), Association for Psychological Science (2014–), American Psychological Association (2011–), Vision Sciences Society (2010–), Society for Neuroscience (2008–), American Association for the Advancement of Science (2008–)

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