Robert D. Hawkins

CONTACT INFORMATION	Princeton University Peretsman Scully Hall Princeton, NJ 08540	*Cell:* (217)-549-6923 *E-mail:* rdhawkins@princeton.edu *WWW:* http://rxdhawkins.com/

ACADEMIC APPOINTMENTS

Princeton University, 2019 – Present

    Postdoctoral Research Fellow

EDUCATION

PhD, Psychology, Stanford University, 2019

BS, Mathematics and Cognitive Science, Indiana University, 2014

FELLOWSHIPS & GRANTS

NSF SBE Postdoctoral Research Fellowship, 2019-present
C. V. Starr Postdoctoral Research Fellowship, 2019-present
E. K. Potter Stanford Graduate Fellowship, 2017-2019
NSF Graduate Research Fellowship, 2014-2017
Arthur R. Metz Scholarship, 2010-2014
Science, Technology, and Research (STARS) Scholarship, 2010-2014
Edward A. Knapp Undergraduate Fellowship, Santa Fe Institute, 2012
IU Hutton Honors College Research Partnership Grant, 2011

AWARDS

Best Paper Award, ICML Workshop on Adaptive and Multi-Task Learning, 2019
Cognitive Science Society Glushko Student Travel Award, 2016 & 2019
Cognitive Science Society Prize for Modeling (in Applied Cognition), 2015
Phi Beta Kappa, 2013
Sigma Xi Outstanding Undergraduate Research Award, 2013
IU Mathematics Cora B. Hennel Memorial Scholarship, 2013
IU Cognitive Science Program Award for Outstanding Achievement, 2013
IU Cognitive Science Program Award for Outstanding Contribution, 2012
Best Paper Award, Midwest Undergraduate Cognitive Science Conference, 2012

PRE-PRINTS

Hawkins, R.D., Frank, M.C., Goodman, N.D. (*under review*). Characterizing the dynamics of learning in repeated reference games. *arXiv preprint:1912.07199*

Hawkins, R.D., Goodman, N.D. (*under review*). Why do you ask? The informational dynamics of questions and answers. *PsyArXiv preprint:10.31234.*

Hawkins, R.D., Gweon, H. Goodman, N.D. (*under revision*). The division of labor in communication: Speakers help listeners account for asymmetries in visual perspective. *ArXiv preprint:1807.09000.*

Hawkins, R.D., Kwon, M., Sadigh, D., Goodman, N.D. (*under revision*). Continual adaptation for efficient machine communication. *arXiv preprint:1911.09896*

JOURNAL PUBLICATIONS

Degen, J., **Hawkins, R.**, Krauss, E., Graf, C., Goodman, N. (*in press*). When redundancy is useful: A Bayesian approach to 'overinformative' referring expressions. *Psychological Review.*

Fan, J., **Hawkins, R.**, Wu, M., Goodman, N. (*in press*). Pragmatic inference and visual abstraction enable contextual flexibility during visual communication. *Computational Brain and Behavior.*

Hawkins, R., Goodman, N., Goldstone, R. (2019). The emergence of social norms and conventions. *Trends in Cognitive Sciences, 23* (2), 158–169.

Hawkins, R.*, Smith, E.*, Au, C., Arias, J., Catapano, R., Hermann, E., Keil, M., Lampinen, A., Raposo, S., Reynolds, J., Salehi, S., Salloum, J., Tan, J., Frank, M. (2018). Improving the Replicability of Psychological Science Through Pedagogy. *Advances in Methods and Practices in Psychological Science, 1* (1), 7–18.

Monroe, W., **Hawkins, R.**, Goodman, N., Potts, C. (2017). Colors in Context: A Pragmatic Neural Model for Grounded Language Understanding. *Transactions of the Association for Computational Linguistics, 5*, 325–338.

Avena-Koenigsberger, A, Misic, B., **Hawkins, R.**, Griffa, A., Hagmann, P., Goñi, J., and Sporns, O. (2017). Path ensembles and a tradeoff between communication efficiency and resilience in the human connectome. *Brain Structure and Function, 222* (1), 603-618.

Hawkins, R., Goldstone, R. L. (2016). The formation of social conventions in real-time environments. *PLoS ONE, 11* (3), e0151670.

Hawkins, R., Houpt, J., Eidels, A., Townsend, J. (2016). Can two dots form a Gestalt? Measuring emergent features with the capacity coefficient. *Vision Research, 126*, 19–33.

Silbert, N., **Hawkins, R.** (2016). A tutorial on general recognition theory. *Journal of Mathematical Psychology, 73*, 94-109.

Hawkins, R. (2015). Conducting real-time multiplayer experiments on the web. *Behavior Research Methods, 47* (4), 966-976

DeDeo, S., **Hawkins, R.**, Klingenstein, S., Hitchcock, T. (2013). Bootstrap methods for the empirical study of decision-making and information flows in social systems. *Entropy, 15* (6), 2246-2276.

Peer-
Reviewed
Conference
Proceedings
Papers

Achlioptas, P., Fan, J., **Hawkins, R.**, Goodman, N., Guibas, L. (2019). ShapeGlot: Learning language for shape differentiation. *Proceedings of the IEEE International Conference on Computer Vision (ICCV).* [poster]

Hawkins, R.*, Kwon, M.*, Sadigh, D., Goodman, N. (2019). Continual adaptation for efficient machine communication. *Proceedings of the ICML Workshop on Adaptive & Multitask Learning: Algorithms & Systems.* [oral]

Hawkins, R.*, Sano, M.*, Goodman, N., Fan, J. (2019). Graphical convention formation during visual communication. *Proceedings of the Forty-First Annual Conference of the Cognitive Science Society.* [oral]

Mukherjee, K., **Hawkins, R.**, Fan, J. (2019). Communicating semantic part information in drawings. *Proceedings of the Forty-First Annual Conference of the Cognitive Science Society.* [poster]

Hawkins, R., Franke, M., Smith, K., Goodman, N. (2018). Emerging abstractions: Lexical conventions are shaped by communicative context. *Proceedings of the Fortieth Annual Conference of the Cognitive Science Society.* [oral]

Hawkins, R., Frank, M., Goodman, N. (2017). Convention-formation in iterated reference games. *Proceedings of the Thirty-Ninth Annual Conference of the Cognitive Science Society.* [oral]

Graf, C., Degen, J., **Hawkins, R.**, Goodman, N. (2016). Animal, dog, or dalmatian? Level of abstraction in nominal referring expressions. *Proceedings of the Thirty-Eighth Annual Conference of the Cognitive Science Society.* [oral]

Hawkins, R., Goodman, N. (2016). Conversational expectations account for apparent limits on theory of mind use. *Proceedings of the Thirty-Eighth Annual Conference of the Cognitive Science Society.* [oral]

Hawkins, R., Stuhlmüller, A., Degen, J., Goodman, N. (2015). Why do you ask? Good questions provoke informative answers. *Proceedings of the Thirty-Seventh Annual Conference of the Cognitive Science Society.* [poster]

Krafft, P. **Hawkins, R.**, Pentland, A., Goodman, N., Tenenbaum, J. (2015). Emergent collective sensing in human groups. *Proceedings of the Thirty-Seventh Annual Conference of the Cognitive Science Society.* [oral]

BOOK
CHAPTERS

Algom, D., Eidels, A. **Hawkins, R.**, Jefferson, B., Townsend, J. (2015). Features of response times: Identification of cognitive mechanisms through mathematical modeling. In *The Oxford Handbook of Computational and Mathematical Psychology.*

BOOKS
(PRINT/WEB)

N. Goodman, J. Tenenbaum, and The ProbMods Contributors (2016). Probabilistic Models of Cognition (2nd ed.). (`https://probmods.org/`)

TECHNICAL
REPORTS

Stuhlmüller, A., **Hawkins, R.**, Narayanaswamy, S., Goodman, N. (2015). Coarse-to-fine sequential Monte Carlo for probabilistic programs. *arXiv*:1509.02962.

INVITED TALKS

TensorFlow and PyTorch User Group, Princeton University, October 2019.

Neuroscience and Social Decision Making (NSDM), Princeton University, October 2019.

Workshop on Teaching Methods via Replication Studies, Montreal, July 2019.

Center for Research in Language (CRL), UCSD, May 2019.

Concepts and Categories (ConCats) Seminar, NYU, December 2018.

PDP Seminar, Princeton University, September 2018.

Symbolic Systems Society Winter Symposium, Stanford University, February 2018.

Interacting Minds Center (IMC) Seminar, Aarhus University, August 2017.

Language Evolution Seminar, University of Edinburgh, August 2017.

Linguistics Colloquium, University of Tübingen, July 2017.

STARS Research Symposium, Indiana University, March 2014.

'Grey Matters' Seminar, Indiana University, November 2013.

CONTRIBUTED
CONFERENCE
PRESENTATIONS
(SELECTED)

Hawkins, R. Goldberg, A, Griffiths, T. (Submitted) Generalizing from individuals to populations: Hierarchical inference supports convention formation. *Society for Philosophy and Psychology.* Princeton, NJ. July 2020.

Fan, J., Hawkins, R. Visual content and social context jointly determine pictorial meaning. Poster at *Society for Philosophy and Psychology.* San Diego, CA. July 2019.

Fan, J., Hawkins, R., Wu, M., Goodman, N. Modeling contextual flexibility in visual communication. Talk at *Vision Sciences Society Annual Meeting*, St. Pete Beach, FL. May 2018.

Hawkins, R., Franke, M., Smith, K., Goodman, N. Learning to communicate about conceptual hierarchies. Talk at *Evolang XII*. Torun, Poland. April 2018.

Hawkins, R., Goodman, N. Why do you ask? Good questions provoke informative answers. Poster at CSLI Workshop on "Bridging computational and psycholinguistic approaches to the study of meaning". Stanford, CA. February 2017.

Degen, J., Graf, C., Hawkins, R., and Goodman, N. "Overinformative" referring expressions aren't really overinformative. Talk at LSA Annual Meeting. January 2017.

Eidels, A., Hawkins, R., Houpt, J., Townsend, J. The quest for the simplest Gestalt. Talk presented at Psychonomic Society Conference; Chicago, IL; November 2015.

Hawkins, R., Goodman, N. Why do you ask? Good questions provoke informative answers. Talk at 14th Annual Summer Interdisciplinary Conference. Mammoth Lakes, CA. July 2015.

Avena-Koenigsberger, A., Sporns, O. Corominas-Murtra, B., Hawkins, R., Contreras, J., Goñi, J. Generalized Search Information: an information theoretical approach to network communication through ensembles of shortest-paths. Poster presented at *NetSci*. Zaragoza, Spain, June 2015.

Hawkins, R., Goldstone, R. Efficiency, fairness, and stability in a real-time, asynchronous game. Talk at 4th Annual Midwest Cognitive Science Conference. Dayton, OH. May 2014.

Townsend, J., Hawkins, R., Wenger, M. A feature story on faces: Dimensions, features, and holism. Talk presented at Psychonomic Society Conference. Toronto, Canada. November 2013.

Hawkins, R., Houpt, J., Eidels, A., Townsend, J. Fundamental properties of simple emergent feature processing. Poster at Vision Sciences Society Annual Meeting. Naples, FL. May 2012.

Hawkins, R. Quantifying emergence in perceptual organization. Talk at Midwest Undergraduate Cognitive Science Conference. Bloomington, IN. April 2012.

Hawkins, R., Houpt, J., Eidels, A., Townsend, J. Wenger, M. Fundamental properties of simple emergent feature processing. Poster at Object Perception, Attention, and Memory. Seattle, WA. November 2011.

Hawkins, R., Houpt, J. Basic features in visual perception. Talk at Midwest Undergraduate Cognitive Science Conference. Bloomington, IN. April 2011.

ADVISING & TEACHING

Students
- Kushin Mukherjee, undergraduate at Vassar (2018)
- Megumi Sano, undergraduate at Stanford (2018)
- Ethan Herenstein, Master's student at Stanford (2018)
- Karl Mulligan, undergraduate at Rutgers (2017)
- Nicole Maslan, undergraduate at Claremont McKenna (2015-2016)

Graduate Teaching Assistant, Stanford University
- Computation and Cognition: a Probabilistic Approach, Falls 2016 - 2018
- Bayesian Statistics for Psychologists, Summer 2016
- Lab in Experimental Methods, Winter 2016
- Statistical Methods for Behavioral and Social Sciences, Fall 2015

Undergraduate Teaching Assistant, Indiana University

- Programming Languages, Fall 2012, Spring 2013
- Philosophical Foundations of Cognitive Science, Spring 2012

PROFESSIONAL SERVICE

Ad Hoc Reviewing
- Behavior Research Methods
- Cognition
- Cognitive Science
- Computational Brain & Behavior
- Journal of Experimental Psychology: General
- Journal of Experimental Psychology: Human Perception and Performance
- PLoS ONE
- Vision Research
- *Cognitive Science Society* conference proceedings
- *EVOLANG* conference proceedings
- National Science Foundation

Conference Service
- Program committee for Bridging AI and Cognitive Science workshop at ICLR, 2019
- Co-organizer for "Emergence of Conventions" symposium at the 38th Annual Meeting of the Cognitive Science Society, Philidelphia, PA, 2016
- Co-organizer for Stanford-Berkeley Cognitive Area Meetup, 2015
- Co-organizer for 5th Annual Midwest Undergraduate Cognitive Science Conference, Bloomington, IN, 2013

Departmental Service
- Stanford graduate program committee, 2015-2018
- Co-organizer for Stanford cognitive science training seminar, 2017-2018
- Co-organizer for Stanford Cog/Neuro area training seminar, 2016-2017
- Stanford graduate admissions committee, 2015-2016

President of IU Student Organization for Cognitive Science, 2011 - 2012
IU Vice Provost for Undergraduate Education Advisory Board, 2011 - 2012