Jessica B. Hamrick · Curriculum Vitae

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(Last updated: May 29, 2016)

EDUCATION

University of California, Berkeley. Berkeley, CA
Pursuing a Ph.D. in Psychology, August 2012 – present.
Advisor: Thomas L. Griffiths

Massachusetts Institute of Technology. Cambridge, MA
B.S. in Computer Science and Engineering, June 2012 (GPA: 4.4/5.0)
Academic Advisor: Gerald Jay Sussman

M.Eng. in Electrical Engineering and Computer Science, June 2012 (GPA: 5.0/5.0)
Thesis Advisor: Joshua B. Tenenbaum

EMPLOYMENT

Software Engineering Intern *May 2016 – August 2016*
Google DeepMind

Graduate Researcher *August 2012 – present*
University of California, Berkeley (Advisor: Thomas L. Griffiths)

Graduate Research Assistant *June 2011 – July 2012*
Undergraduate Researcher *January 2009 – May 2011*
Massachusetts Institute of Technology (Advisor: Joshua B. Tenenbaum)

Undergraduate Researcher *June 2008 – December 2009*
Personal Robotics Group – MIT Media Lab (Advisor: Cynthia Breazeal)

FELLOWSHIPS, GRANTS, AND AWARDS

- 2015-2016 Outstanding Graduate Student Instructor Award. Awarded March 2016.
- Cognitive Science Society Student Travel Grant. Awarded July 2015.
- National Science Foundation Graduate Fellowship (three years, 2014–2017), tuition and stipend. Awarded April 2013.
- Berkeley Fellowship, University of California Berkeley (two years, 2012–2014), tuition and stipend. Awarded March 2012.

PEER-REVIEWED ARTICLES

- Liu, C., **Hamrick, J. B.**, Fisac, J. F., Dragan, A. D., Hedrick, J. K., Sastry, S. S., & Griffiths, T. L. (in press). Goal Inference Improves Objective and Perceived Performance in Human-Robot Collaboration. In J. Thangarajah, K. Tuyls, C. Jonker, & S. Marsella (Eds.), *Proceedings of the 15th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2016)*.
- Gureckis, T. M., Martin, J., McDonnell, J., Alexander, R. S., Markant, D. B., Coenen, A., **Hamrick, J. B.**, & Chan, P. (in press). psiTurk: An open-source framework for conducting replicable behavioral experiments online. *Behavioral Research Methods*.
- **Hamrick, J. B.**, Smith, K. A., Griffiths, T. L., & Vul, E. (2015). Think again? The amount of mental simulation tracks uncertainty in the outcome. In *Proceedings of the 37th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Goodman, N. D., Frank, M. C., Griffiths, T. L., Tenenbaum, J. B., Battaglia, P. W., & **Hamrick, J. B.** (2015). Relevant and robust: A response to Marcus & Davis (2013). *Psychological Science*, 26(4), 539-541.
- Lieder, F., Plunkett, D., **Hamrick, J. B.**, Russell, S. J., Hay, N. J., & Griffiths, T. L. (2014). Algorithm selection by rational metareasoning as a model of human strategy selection. *Advances in Neural Information Processing Systems*, 27.

- **Hamrick J. B.** & Griffiths T. L. (2014). What to simulate? Inferring the right direction for mental rotation. In P. Bello, M. Guarini, M. McShane & B. Scassellati (Eds.), *Proceedings of the 36th Annual Meeting of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- **Hamrick J. B.** & Griffiths T. L. (2013). Mental Rotation as Bayesian Quadrature. In *NIPS Bayesian Optimization Workshop*.
- Battaglia P. W., **Hamrick J. B.**, & Tenenbaum J. B. (2013). Simulation as an engine of physical scene understanding. *Proceedings of the National Academy of Sciences*, 110(45), 18327–18332.
- Abbott J. T., **Hamrick J. B.**, & Griffiths T. L. (2013). Approximating Bayesian inference with a sparse distributed memory system. In M. Knauff, M. Pauen, N. Sebanz, & I. Wachsmuth (Eds.), *Proceedings of the 35th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- **Hamrick J. B.**, Battaglia P. W., & Tenenbaum J. B. (2011). Internal physics models guide probabilistic judgments about object dynamics. In L. Carlson, C. Hölscher, & T. Shipley (Eds.), *Proceedings of the 33rd Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.

OTHER ARTICLES

- **Hamrick, J. B.** (in press). A Rejection Sampler. In M. DiBernardo & A. Brown (Eds.), *The Architecture of Open Source Applications, Volume 4: 500 Lines or Less*.
- **Hamrick J. B.** (2012). Physical reasoning in complex scenes is sensitive to mass. M.Eng. thesis, Massachusetts Institute of Technology, Cambridge, MA.

TALKS AND POSTERS

- Liu, C., **Hamrick, J. B.**, Fisac, J. F., Dragan, A. D., Hedrick, J. K., Sastry, S. S., & Griffiths, T. L. (2016, May). Goal Inference Improves Objective and Perceived Performance in Human-Robot Collaboration. Poster presented at AAMAS 2016. Singapore.
- **Hamrick, J. B.** (2016, March). Creating and Grading Assignments in the IPython/Jupyter Notebook with nbgrader. Demo presented at SIGCSE 2016. Memphis, TN.
- **Hamrick, J. B.** (2015, December). Thing again? Bounded optimality in decisions from internally generated evidence. Invited talk presented at the Bounded Optimality and Rational Metareasoning Workshop, NIPS 2015. Montreal, Canada.
- **Hamrick, J. B.** (2015, November). Teaching with Jupyter Notebooks. Invited talk presented at CodeNeuro 2015. San Francisco, CA.
- **Hamrick, J. B.**, Smith, K. A., Griffiths, T. L., & Vul, E. (2015, July). Think again? The amount of mental simulation tracks uncertainty in the outcome. Talk presented at the 37th Annual Conference of the Cognitive Science Society. Austin, TX.
- **Hamrick, J. B.**, Ragan-Kelley, M., & Kelley, K. (2015, July). Teaching with IPython/Jupyter Notebooks and JupyterHub. Talk presented at SciPy 2015. Austin, TX.
- **Hamrick J. B.** & Griffiths, T. L. (2014, August). What to simulate? Inferring the right direction for mental rotation. Talk presented at the 36th Annual Conference of the Cognitive Science Society. Quebec City, Canada.
- **Hamrick J. B.** & Battaglia, P. W. (2014, April). Games for Science: Creating interactive psychology experiments in Python with Panda3D. Talk presented at PyCon 2014. Montreal, Canada.
- **Hamrick J. B.** & Griffiths, T. L. (2013, December). Mental Rotation as Bayesian Quadrature. Poster presented by Jessica Hamrick at the NIPS Bayesian Optimization Workshop.
- **Hamrick J. B.** (2013, November). Rewriting Python Docstrings with a Metaclass. Talk presented at the San Francisco Python Meetup.
- **Hamrick J. B.**, Battaglia P. W., Griffiths T. L, & Tenenbaum J. B. (2013, August). Inferring mass in complex physical scenes via probabilistic simulation. Talk presented by Jessica Hamrick at the 46th Annual Meeting of the Society of Mathematical Psychology. Potsdam, Germany.
- **Hamrick J. B.**, Battaglia P. W., Griffiths T. L, & Tenenbaum J. B. (2013, August). Inferring mass in complex physical scenes via probabilistic simulation. Poster presented by Jessica Hamrick at the 35th Annual Conference of the Cognitive Science Society. Berlin, Germany.

- Battaglia P. W., **Hamrick J. B.**, & Tenenbaum J. B. (2012, May). Intuitive mechanics in visual reasoning about complex scenes with unknown forces. Poster presented by Peter Battaglia at Annual Meeting of the Vision Sciences Society. Naples, FL.
- **Hamrick J. B.**, Battaglia P. W., & Tenenbaum J. B. (2012, May). Physics knowledge aids object perception in dynamic scenes. Poster presented by Jessica Hamrick at Annual Meeting of the Vision Sciences Society. Naples, FL.
- **Hamrick J. B.**, Battaglia P. W., & Tenenbaum J. B. (2011, July). Internal physics models guide probabilistic judgments about object dynamics. Paper presented at the 33rd Annual Conference of the Cognitive Science Society. Boston, MA.
- Battaglia P. W., **Hamrick J. B.**, & Tenenbaum J. B. (2011, May). Intuitive physics judgments guided by probabilistic dynamics model. Poster presented by Peter Battaglia at the Annual Meeting of the Vision Sciences Society. Naples, FL.

TEACHING

- Software Carpentry (July 6-7, 2015, Austin, TX)
  `http://software-carpentry.org/`
  Instructor for a boot camp teaching computer skills to scientists at the SciPy 2015 conference, including Python programming, Git version control, the command line, and various scientific Python libraries.
- COGSCI 131: Computational Models of Cognition (Spring 2015, UC Berkeley)
  `http://www.jesshamrick.com/2014/03/24/deploying-jupyterhub-for-education`
  Graduate student instructor. Spearheaded an effort to convert assignments from MATLAB to IPython notebooks and maintained a deployment of JupyterHub for the 220 students to work on their IPython notebook assignments.
- Software Carpentry (September 22-23, 2014, Berkeley, CA)
  `http://software-carpentry.org/`
  Instructor for a boot camp teaching computer skills to scientists at the Lawrence Berkeley National Laboratory, including Python programming, Git version control, the command line, and data processing.
- Software Carpentry (April 14-15, 2014, Montreal, CA)
  `http://software-carpentry.org/`
  Instructor for a boot camp teaching computer skills to librarians, including Python programming, Git version control, the command line, and data processing.
- COGSCI 131: Computational Models of Cognition (Spring 2014, UC Berkeley)
  Graduate student instructor.
- Python FUNdamentals (August 19-22, 2013, UC Berkeley)
  `https://github.com/dlab-berkeley/python-fundamentals`
  Helper for a crash course teaching introductory Python to graduate students.
- Software Carpentry (April 13-14, 2013, UC Berkeley)
  `http://software-carpentry.org/`
  Helper for a boot camp teaching scientists computer skills in Python programming, Git version control, testing, the command line, and data management.
- Python for Computational Cognitive Science (Summer 2012, MIT).
  `https://github.com/jhamrick/python-course`
  Co-instructor for a crash course in scientific Python for computational cognitive science.
- Boston Python Workshop (May, July, and December 2011, Boston, MA)
  `http://openhatch.org/wiki/Boston_Python_Workshop`
  Helper for workshops teaching Python to women and their friends.

MENTORING

- Elena Ouyang (undergraduate research assistant), September 2014 – Present
- Crystal Chen (undergraduate research assistant), February 2013 – May 2014

SERVICE AND SOCIETIES

- Jupyter Steering Council (March 2015 – Present), Member
  `https://github.com/jupyter/governance`
- Cognitive Science Society (July 2011 – Present), Student Member
  `http://www.cognitivesciencesociety.org/`
- MIT Student Information Processing Board (September 2008 – June 2012)
  Volunteer student computing group, `http://sipb.mit.edu/`
  - Associate Member (June 2012 – present)
  - Full Member (February 2009 – June 2012). I helped other students with computer problems and worked on multiple service projects, including Gutenbach, MIT$\LaTeX$, Debathena (MIT's operating system), and Dodona. I also co-taught a class on the structure of the internet in January 2009.
  - Executive Committee (February 2009 – February 2012)
  - Chair (February 2010 – February 2011). While I was Chair, SIPB received the Karl Taylor Compton prize, MIT's most prestigious award given to students or student groups.

SOFTWARE

- Note: for a full list of projects I maintain or have contributed to, please see `https://github.com/jhamrick?tab=repositories`.
- nbgrader (primary maintainer)
  `https://github.com/jupyter/nbgrader`
  A tool built on top of the IPython/Jupyter notebook to help instructors create, distribute, collect, and grade assignments in the notebook.
- Jupyter/IPython (maintainer)
  `http://jupyter.org/`
  An architecture for interactive computing.
- nbflow (primary maintainer)
  `https://github.com/jhamrick/nbflow`
  A tool that supports one-button reproducible workflows with the Jupyter Notebook and Scons.
- psiTurk (contributor)
  `https://github.com/NYUCCL/psiTurk`
  A platform for running psychological experiments on Amazon's Mechanical Turk.
- scenesim (contributor)
  `https://github.com/pbattaglia/scenesim`
  A Python library for simulating and rendering physical scenes.
- Bayesian Quadrature library for Python (primary maintainer)
  `https://github.com/jhamrick/bayesian-quadrature`
  A Python library for using Bayesian quadrature methods.
- Gaussian Process library for Python (primary maintainer)
  `http://github.com/jhamrick/gaussian_processes`
  A Python library for using Gaussian processes. While other Python implementations of Gaussian processes exist, this library is specifically designed to expose the underlying math (e.g., log-likelihoods, derivatives of the log-likelihood, etc.).