Tomer D. Ullman

CONTACT
INFORMATION

Massachusetts Institute of Technology
Department of Brain and Cognitive Sciences
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POSITION

Postdoctoral associate at the Center for Brains, Minds & Machines (CBMM) working in Josh Tenenbaum's Computational Cognitive Science group at MIT, and Elizabeth Spelke's Infant Development lab at Harvard.

RESEARCH
INTERESTS

Child development, computational cognitive modeling, probabilistic programming, machine learning, intuitive theories, common sense, theory of the self

EDUCATION

Massachusetts Institute of Technology

Ph.D. in Brain and Cognitive Sciences (2008-2015)

- Dissertation Topic: On the Nature and Origin of Intuitive Theories
- Advisor: Josh Tenenbaum

Hebrew University of Jerusalem

B.S. in Physics and Cognitive Science, (2004-2008)

- *Magna Cum Laude*

Publications

MANUSCRIPTS
UNDER REVISION

Ullman, T.D., Stuhlmuller A., Goodman, N.D. & Tenenbaum, J.B. Learning physics from dynamical scenes. *Cognitive Psychology.*

MANUSCRIPTS
UNDER REVIEW

Gerstenberg, T., Ullman, T., Nagel, J., Kleiman-Weiner, M., Lagnado, D. & Tenenbaum, J.B. Lucky or clever? From changed expectations to attributions of responsibility.

MANUSCRIPTS IN
PREPARATION

Ullman, T.D., Battaglia, P., Tenenbaum J.B. & Spelke, E., The physics engine in your head. *Opinion invited for Trends in Cognitive Science.*

Ullman, T.D., Baker, C.L., Macindoe, O., Evans, O., Goodman, N.D. & Tenenbaum, J.B. Help or hinder: Bayesian models of social goal inference.

Ullman, T.D., McCoy, J.P. & Paul, L.A., Modal prospection.

Ullman, T.D. & McCoy, J.P., A minimal Turing test.

Ullman, T.D. & McCoy, J.P., The plausible impossible: Judgments of effort for magical violations of intuitive physics.

Liu, S., Ullman, T.D., Tenenbaum J.B. & Spelke, E., Ten-month-old infants infer value from effort.

Ullman, T.D., Xu, Y. & Goodman, N.D., The pragmatics of spatial language.

JOURNAL ARTICLES   Lake, B. M., Ullman, T. D., Tenenbaum, J. B., and Gershman, S. J. (in press), Building machines that learn and think like people. *Behavioral and Brain Sciences.*

J. K. Hamlin, T. D. Ullman, J. B. Tenenbaum, N. D. Goodman and C. L. Baker (2013), The mentalistic basis of core social cognition: Experiments in preverbal infants and a computational model. *Developmental Science.*

T. D. Ullman, N. D. Goodman and J. B. Tenenbaum (2012), Theory learning as stochastic search in the language of thought. *Cognitive Development.*

N. D. Goodman, T.D. Ullman and J. B. Tenenbaum (2012), Learning a theory of causality. *Psychological Review.*

PEER REVIEWED CONFERENCE PROCEEDINGS   Ullman, T.D., Xu, Y. & Goodman, N.D. (2016). The Pragmatics of spatial language. *Proceedings of the 38th Annual Conference of the Cognitive Science Society.*

Ullman, T.D., Siegel, M., Tenenbaum, J.B. & Gershman, S.J. (2016). Coalescing the vapors of human experience into a viable and meaningful comprehension. *Proceedings of the 38th Annual Conference of the Cognitive Science Society.*

Kryven, M., Ullman, T.D., Cowan, W. & Tenenbaum, J.B. (2016). Outcome or strategy? A Bayesian model of intelligence attribution. *Proceedings of the 38th Annual Conference of the Cognitive Science Society.*

Gerstenberg, T., Ullman, T. D., Kleiman-Weiner, M., Lagnado, D. A. & Tenenbaum, J. B. (2014). Wins above Replacement: Responsibility attributions as counterfactual replacements. *Proceedings of the 36th Annual Conference of the Cognitive Science society.*

Ullman, T.D., Stuhlmuller A., Goodman, N.D. & Tenenbaum, J.B. (2014). Learning physics from dynamical scenes. *Proceedings of the 36th Annual Conference of the Cognitive Science society.*

Bonawitz E., Ullman, T.D., Gopnik, A. & Tenenbaum, J.B. (2012). Sticking to the evidence? A Computational and behavioral case Study of micro-theory change in the domain of magnetism, *International Conference Developmental Learning and Epigenetic Robotics; best paper award: experiment combined with computational model.*

Ullman, T.D.*, McCoy, J.P.*, Stuhlmuller, A., Gerstenberg, T. & Tenenbaum J.B. (2012). Why blame Bob? Probabilistic generative models, counterfactual reasoning, and blame attribution. *Proceedings of the 33rd Annual Conference of the Cognitive Science Society.*

Ullman, T.D., Goodman, N.D. & J. B. Tenenbaum (2010). Theory acquisition as stochastic search. *Proceedings of the 32nd Annual Conference of the Cognitive Science Society.*

Ullman, T.D., Baker, C.L., Macindoe, O., Evans, O., Goodman, N.D. & Tenenbaum, J.B. (2010). Help or hinder: Bayesian models of social goal inference. *Advances in Neural Information Processing Systems (Vol. 22, pp. 1874-1882).*

Goodman, N.D., Ullman, T.D. & Tenenbaum, J.B. (2009). Learning a theory of causality *Proceedings of the 31st Annual Conference of the Cognitive Science Society.*

Talks and Presentations

People and things.
Current Work in Developmental Psychology Colloquium. Boston College, MA. 2016.

Development, psychology, physics.
DeepMind Technologies, London. 2016.

Modal prospection
Philosophy Seminar. Rutgers University, NJ. 2016.

Imagining and evaluating possible future selves,
42nd Meeting of the Society for Philosophy and Psychology. Austin, TX. 2016.

Computational cognitive science,
Interdisciplinary College on AI, Germany. 2016.

Probabilistic programming,
Interdisciplinary College on AI, Germany. 2016.

Effort as a bridge across action and action understanding,
The 20th International Congress on Infant Studies. New Orleans, LA. 2016.

Children's learning as stochastic search,
Society for Research in Child Development. Philadelphia, PA. 2015.

Theories, imagination, and the generation of new ideas,
Center for Brains, Minds and Machines Summer School. Woods Hole, MA. 2015.

Probabilistic programming tutorial,
Center for Brains, Minds and Machines Summer School. Woods Hole, MA. 2015.

Theories of physics,
More on Development. Columbus, OH. 2015.

Modeling a theory of the self,
Workshop on Transformative Experiences. Chicago, IL. 2015.

Deep thoughts: The value of understanding,
Commentator at 41th Meeting of the Society for Philosophy and Psychology. Duke University, NC. 2015.

Wins above replacement: Responsibility attributions as counterfactual Replacement,
40th Meeting of the Society for Philosophy and Psychology. Vancouver, Canada. 2014.

Theories, imagination, and the generation of new ideas,
Center for Brains, Minds and Machines Summer School. Woods Hole, MA 2014.

Probabilistic programming tutorial,
Center for Brains, Minds and Machines Summer School. Woods Hole, MA. 2014.

Learning physics from dynamic scenes,
36th Annual Meeting of the Cognitive Science Society. Quebec, Canada. 2014.

Theories, imagination, and the generation of new ideas,
Pre-conference debate at Child Development Society Meeting. Memphis, TN. 2013.

Help or Hinder? Bayesian Models of Social Goal Inference,
Simons Center, MIT. 2010.

Why Blame Bob? Probabilistic Generative Models and Blame Attribution,
34th Annual Meeting of the Cognitive Science Society. Sapporo, Japan. 2012.

Theory Learning as Stochastic Search,
$32nd$ Annual Meeting of the Cognitive Science Society. Portland, OR. 2010.

Help or Hinder? Bayesian Models of Social Goal Inference,
Machine Learning Summer School, Cambridge, UK. 2009.

Help or Hinder? Bayesian Models of Social Goal Inference,
$23rd$ Annual Conference on Neural Information Processing Systems. Vancouver. 2009.

Other

TEACHING EXPERIENCE AND OUTREACH

2015	Lecturer and Teaching Assistant, CBMM summer school
2014	Lecturer and Teaching Assistant, CBMM summer school
2012	Teaching Assistant, Topics in early childhood cognition (MIT 9.85)
2011	Teaching Assistant, Cognitive processes (MIT 9.65)
2010	Planning committee member, Cambridge Science Festival
2009	Presenter and volunteer at Neuroscience Day, Museum of Science

HONORS AND AWARDS

2011	MIT Continued Dedication to Teaching award
2010	MIT Excellence in Teaching award
2010	National Science Foundation (NSF) fellowship
2009	Singleton Graduate Fellowship
2009	National Science Foundation (NSF) honorable mention
2004-2007	Hebrew University of Jerusalem Scholarships of Excellence

SERVICE

Reviewer for: Cognition, Cognitive Psychology, Cognitive Development, Cognitive Science, Developmental Psychology, Proceedings of the Royal Society B, Neural Information Processing Systems (NIPS), The Annual Conference of the Cognitive Science Society

PC Member AAAI main track

Organizer of "More on Development (MOD)" (2015)

Co-Organizer of Child Development Society pre-conference (2014)

STUDENTS MENTORED

Heather Tarr (2016)

Alexandra Wheeler (2016)

Eliza Kosoy (2016)

MEMBERSHIP

Cognitive Development Society (CDS)

Cognitive Science Society (CSS)

Society for Philosophy and Psychology (SPP)

Society for Research in Child Development (SRCD)

SKILLS   Languages: English, Hebrew, some Latin

                Programming: Python, Church, Matlab, Blender, Javascript, Julia and R

REFERENCES   **Josh Tenenbaum**, Professor, Brain and Cognitive Science, MIT, `jbt@mit.edu`

                Laura Schulz, Professor, Brain and Cognitive Science, MIT, `lschulz@mit.edu`

                Elizabeth Spelke, Professor, Psychology, Harvard, `spelke@wjh.harvard.edu`

                Noah Goodman, Professor, Psychology, Stanford University, `ngoodman@stanford.edu`