

Ilker Yildirim

Research Scientist
Dept. of Brain & Cognitive Sciences
MIT, Cambridge, MA

P: 585-267-0718
E: ilkery@mit.edu
W: <http://web.mit.edu/ilkery/www/>

Research Interests

cognitive science, computational neuroscience, artificial intelligence.

Education

2014, Ph.D., Brain & Cognitive Sciences and Computer Science, University of Rochester.

2011, M.A., Brain & Cognitive Sciences, University of Rochester.

2010, Machine Learning and Cognitive Science Summer School, 2010, Sardinia, Italy.

2009, M.S., Computer Science, Bogazici University, Istanbul, Turkey.

2008, Summer School, 10th European Agents Systems Summer School, New University of Lisbon, Lisbon, Portugal.

2007, B.S. Computer Science, Bogazici University, Istanbul, Turkey.

Publications

In submission

Yildirim, I., Freiwald, W.F., & Tenenbaum, J.B. (in submission). A neural circuit for analysis-by-synthesis in the primate face processing system.

Submitted

Bates, C.J., Yildirim, I., Battaglia, P.W., & Tenenbaum, J.B. (submitted). Going with the flow: Psychophysical studies and simulation-based models of people's intuitions for the dynamics of liquids.

Articles

Yildirim, I.*, Wu, J.*, Lim, J., Freeman, W.T., Tenenbaum, J.B. (2015). Galileo: Perceiving physical object properties by integrating a physics engine with deep learning. *Neural Information Processing Systems*.

Erdogan, G., Yildirim, I., & Jacobs, R. A. Do Multisensory Representations Underlie Visual-Haptic Transfer of Object Shape Knowledge? A Probabilistic Language of Thought Approach. (2015). *PLOS Computational Biology*.

Yildirim, I. & Jacobs, R.A. (2015). Learning Multisensory Representations for Auditory-Visual Transfer of Sequence Category Knowledge: A Probabilistic Language of Thought Approach. *Psychonomic Bulletin & Review*.

Yildirim, I., Degen, J., Tanenhaus, M.K., Jaeger, T.F. Adaptation and talker-specificity in quantifier interpretation. (2015). *Journal of Memory and Language*.

Yildirim, I. & Jacobs, R. A. (2013). Transfer of Object Category Knowledge Across Visual and Haptic Modalities: Experimental and Computational Studies. *Cognition*, 126, 135-148.

Yildirim, I. & Jacobs, R.A. (2012). A Rational Approach to the Acquisition of Multisensory Representations. *Cognitive Science*, 36(2), 305-332.

Yildirim, I. & Yolum, P. (2009). Hybrid Models for Achieving and Maintaining Cooperative Symbiotic Groups. *Mind & Society*, 8(2), 243-258.

Proceedings

Yildirim, I.*, Siegel, M.*, & Tenenbaum, J.B. (2016). Perceiving Fully Occluded Objects via Physical Simulation. *Thirty-Eight Annual Conference of the Cognitive Science Society*.

Allen, K. R., Yildirim, I., & Tenenbaum, J.B. (2016). Integrating identification and perception: A case study of familiar and unfamiliar face processing. *Thirty-Eight Annual Conference of the Cognitive Science Society*.

Yildirim, I., Kulkarni, T.D., Freiwald, W.F., & Tenenbaum, J.B. (2015). Efficient analysis-by-synthesis in vision: A computational framework, behavioral tests, and modeling neuronal representations. *Thirty-Seventh Annual Conference of the Cognitive Science Society*.

Bates, C.J., Yildirim, I., Battaglia, P.W., & Tenenbaum, J.B. (2015). Humans predict liquid dynamics using probabilistic simulation. *Thirty-Seventh Annual Conference of the Cognitive Science Society*.

Ergodan, G., Yildirim, I., & Jacobs, R.A. (2014). Transfer of Object Shape Knowledge Across Visual and Haptic Modalities. *Proceedings of the Thirty-Sixth Annual Conference of the Cognitive Science Society*.

Yildirim, I., Degen, J., Tanenhaus, M.K., & Jaeger, T.F. (2013). Linguistic Variability and Adaptation in Quantifier Meanings. *In Proceedings of the Thirty-Fifth Annual Conference of the Cognitive Science Society*.

Yildirim, I. & Jacobs, R.A. (2010). A Bayesian Nonparametric Approach to Multisensory Perception. *In Proceedings of the Thirty-Second Annual Conference of the Cognitive Science Society*.

Yildirim, I., Aran, O., Yolum, P., & Akarun, L. (2009). Cooperative Sign Language Tutoring: A Multi-agent Approach. *In Proceedings of Engineering Societies in Agents' World X, LNAI 5881*, 213-228.

Yildirim, I. & Yolum, P. (2008). Hybrid Models for Achieving and Maintaining Collaborative Symbiotic Groups. *In Proceedings of 5th European Social Simulation Association Conference*.

Abstracts & Workshop papers

Yildirim, I.*, Wu, J.*, Du, Y., & Tenenbaum, J.B. (2016). Interpreting Dynamic Scenes by a Physics Engine and Bottom-up Visual Cues. *1st Workshop on Action and Anticipation for Visual Learning, European Conference on Computer Vision*.

Erdogan, G., Yildirim, I., Jacobs, R.A. (2015). An Analysis-By-Synthesis Approach to Multisensory Object Shape Perception. *NIPS workshop on Multimodal machine learning*.

Allen, K., Yildirim, I., Tenenbaum, J.B. (2015). A model of familiar and unfamiliar 3D face recognition. *NIPS workshop on Blackbox inference and probabilistic programming*.

Yildirim, I., Kulkarni, T.D., Freiwald, W.A., & Tenenbaum, J.B. (2015). Explaining monkey face patch system as deep inverse graphics. *Cosyne 2015*. (poster)

Kulkarni, T.D., Yildirim, I., Freiwald, W.A., & Tenenbaum, J.B. (2015). Deep Generative Vision as Approximate Bayesian Computation. *NIPS ABC Workshop 2015*.

Yildirim, I., Degen, J., Tanenhaus, M.K., Jaeger, T.F. (2013). Adaptation and talker-specificity in quantifier interpretation. *AMLaP 2013*. (talk)

Invited Talks

Brown University, Perception and Action Seminar Series, December 2016.

Physical and Social Scene Understanding Workshop at CogSci 16, Philadelphia, August 2016.

RIKEN Institute, Tokyo; Special seminar; November 2015.

University Electro-Communications, Tokyo; Object vision in the monkey, machine, and mind; November 2015.

Tong lab, Vanderbilt University; 2014.

Saxe Lab, MIT; 2014.

Tenenbaum lab, MIT; 2014.

Center for Brains, Minds, and Machines weekly research meeting, MIT; 2014.

BCS lunch talk series, 2011, 2013; University of Rochester.

Press coverage (Selected)

WIRED magazine, "MIT Researchers Want to Teach Robots How to Wash Dishes", 2015.

VICE magazine, "How to Teach a Robot to Build a Rube Goldberg Machine", 2015.

Boston globe, "MIT system makes human-like predictions about how objects move through the world", 2015.

Awards

Best paper award, Engineering Societies in the Agents' World X, 2009, for "Cooperative sign language tutoring: A multiagent approach."

Outstanding dissertation prize, University of Rochester. 2015.

Teaching

Guest Lecturer

BCS 111, Foundations of Cognitive Science.

Topic: Neurally Inspired Models of Information Processing (Fall 2011, Summer 2012, Fall 2012, Summer 2013).

Topic: Dynamical Systems (Fall 2011).

Topic: Motor Control (Fall 2010).

Teaching Assistant

BCS 153, Cognition

Instructor: Daphne Bavelier, Spring 2011.

BCS 111, Foundations of Cognitive Science.

Instructor: Thomas Farmer, Fall 2011.

BCS 110, Neural Foundations of Behavior.

Instructor: Andrea Hinds, Fall 2012.

Departmental Service

2010–2011, BCS Lunch Talks Coordinator, Department of Brain & Cognitive Sciences, University of Rochester.

Professional Membership and Service

Reviewing

Psychological Review (Ad Hoc).

Annual Conference of the Cognitive Science Society (Ad Hoc).

Memberships (Past and Present)

Cognitive Science Society.