

Ilker Yildirim
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Positions

Yale University

Department of Psychology
Department of Statistics & Data Science (secondary)
Assistant Professor, 2019-present.

Massachusetts Institute of Technology

Department of Brain & Cognitive Sciences

The Rockefeller University

Laboratory of Neural Systems
Postdoc/Research Scientist 2014-2019.

Education

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

Thesis: From Perception to Conception: Learning Multisensory Representations
2011, M.A., Brain & Cognitive Sciences, University of Rochester.

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

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

Honors and grants

AFOSR Young Investigator Program Award. 2022-2025.

(Given to 1 person per year in my field; funding commitment \$450,000.)

NIH R21 “Identifying neurocognitive fingerprints of adolescent development”; co-PI (PI: Arielle Baskin-Sommers). 2023-2025.

Outstanding dissertation prize, University of Rochester. 2015.

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

Publications

***Manuscripts
in preparation***

Shah, A., Saeed, B., Tenenbaum, J.B., Gerstenberg, T., Gweon, H., & Yildirim, I. The computational basis of understanding human-object interaction. (draft available upon request).

Zhang, Y., Bi, W., Miao, Y., & Yildirim, I. Computational and behavioral evidence that intuitive physics underlies liquid perception. (draft available upon request).

***Under review
articles***

Bi, W., Lin, Q., Peng, K., Shah, A.D., & Yildirim, I. Dissociation of statistical and physics-based representations of visual objects in the human brain. (under review).

Belledonne, M., Butkus, E., Scholl, B.J., & Yildirim, I. Adaptive computation as a new mechanism of dynamic human attention. (revise and resubmit, *Psychological Review*).

Bi, W., Shah, A., Wong, K., Scholl, B.J., & Yildirim, I. Computational models reveal that intuitive physics underlies perception of soft objects. (revise and resubmit, *Nature Communications*).

Zhang, Y., Ongchoco, J.D.K., & Yildirim, I. From the flow of liquids to the flow of time: Uncovering spontaneous mental simulations of intuitive physics in online visual perception. (revise and resubmit *Psychological Science*).

Yilmaz, H., Shah, A. D., Letrou, A., Kumar, S., Vogels, R., & Yildirim, I. Multi-area processing in primate inferotemporal cortex implements inverse graphics. (revise and resubmit, *PNAS*).

Peters, B., DiCarlo, J.J., Gureckis, T., Haefner, R., Isik, L., Tenenbaum, J.B., Konkle, T., Naseralis, T., Stachenfeld, K., Tavares, Z., Tsao, D., Yildirim, I., & Kriegeskorte, N. How does the brain combine generative and discriminative computations in vision? (under extended review at *Neurons, Behavior, Data Analysis, and Theory*).

Yildirim, I. & Bi, W. Visual perception of intuitive physics and its computational basis (Invited article for *Annual Review of Vision Science*; under review).

Refereed journal articles

Lin, Q.*, Li, Z.*, Lafferty, J., & Yildirim, I. (2024). Images with harder-to-reconstruct visual representations leave stronger memory traces. *Nature Human Behaviour*.

Yildirim, I.*, Siegel, M.*, Soltani, A.A.*, Chadhuri, S.R., & Tenenbaum, J.B. (2024). Perception of 3D Shape Integrates Intuitive Physics and Analysis-by-Synthesis. *Nature Human Behaviour*, 8(2). **Cover Article.**

Yates, T., Yasuda, S., & Yildirim, I. (2024). Temporal segmentation and ‘look ahead’ simulation: Physical events structure visual perception of intuitive physics. *Journal of Experimental Psychology: Human Perception and Performance (JEP:HPP)*.

Yildirim, I. & Paul, L. (2024). From task structure to world models: What do LLMs know? *Trends in Cognitive Sciences (TICS)*.

Invited reply: New ways of characterizing and acquiring knowledge. *TICS*.

Yamada, Y.*, Bao, Y.*, Lampinen, A.K., Kasai, J. & Yildirim, I. (2024). Evaluating spatial understanding of large language models. *Transactions in Machine Learning Research (TMLR)*.

Yamada, Y., Zhang, F, Kluger, Y., & Yildirim, I. (2024). On three-dimensional reconstruction pre-training as a prior to improve adversarial robustness. *Entropy*, 26(3).

Paskewitz, S., Brazil, I., Yildirim, I., Ruiz, S. & Baskin-Sommers, A. (2024). Enhancing within-person estimation of neurocognition and the prediction of externalizing behaviors in adolescents. *Computational Psychiatry*.

Wong, K. W., Bi, W., Soltani, A. A., Yildirim, I. & Scholl, B. J. (2023) Seeing soft materials draped over objects: A case study of intuitive physics in perception, attention, & memory. *Psychological Science*, 34(1), 111-119.

Yildirim, I., Belledonne, M., Freiwald, W. F., & Tenenbaum, J.B. (2020). Efficient inverse graphics in biological face processing. *Science Advances*, 6(10), eaax5979.

Yildirim, I., Wu, J., Kanwisher, N., & Tenenbaum, J.B. (2019). An integrative computational architecture for object-driven cortex. *Current Opinion in Neurobiology*, 55, 73-81.

Bates, C.J., Yildirim, I., Battaglia, P.W., & Tenenbaum, J.B. (2019). Modeling human intuitions about liquid flow with particle-based simulation. *PLoS Computational Biology*, 15(7), e1007210.

Erdogan, G., Yildirim, I., & Jacobs, R. A. (2015). From sensory signals to modality-independent conceptual representations: A probabilistic language of thought approach. *PLoS Computational Biology*, 11(11), e1004610.

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*, 22, 673-686.

Yildirim, I., Degen, J., Tanenhaus, M. K., & Jaeger, T. F. (2015). Talker-specificity and adaptation in quantifier interpretation. *Journal of Memory and Language*, 87, 128-143.

Yildirim, I. & Jacobs, R. A. (2013). Transfer of object category knowledge across visual and haptic modalities: Experimental and computational studies. *Cognition*, 126(2), 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, 243-258.

**Computer science
conference
proceedings**

Yamada, Y.*, Tang, Y.*, Zhang, M., & Yildirim, I. (2023). When are lemons purple? The concept association bias of vision-language models. *Empirical Methods in Natural Language Processing (EMNLP)*.

Janner, M., Wu, J., Kulkarni, T., Yildirim, I., Tenenbaum, & J.B. (2017). Self-supervised intrinsic image decomposition. *Neural Information Processing Systems (NeurIPS)*.

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 (NeurIPS)*.

Book chapters

Yildirim, I., Siegel, M., & Tenenbaum, J.B. (2020). Physical object representations for perception and cognition. *The Cognitive Neurosciences, 6th edition*, Gazzaniga, Mangun, Poeppel (Editors).

**CogSci
proceedings
(6-page papers)**

Martinsons, L., Muchovej, J., & Yildirim, I. (2024). Generative semantic transformation process: A case study in goal prediction via online bayesian language inference. *In 45th Annual Conference of the Cognitive Science Society (CogSci)*.

Nguyen, B. & Yildirim, I. (2024). An intuitive physics approach to modeling melodic expectation. *In 45th Annual Conference of the Cognitive Science Society (CogSci)*.

Zhang, Y., Belledonne, M., Yates, T. & Yildirim, I. (2023). Where does the flow go? Humans automatically predict liquid pathing with coarse-grained simulation. *In 44th Annual Conference of the Cognitive Science Society (CogSci)*.

Belledonne, M. & Yildirim, I. (2021). Automatic computation of navigational affordances explains selective processing of geometry in scene perception: behavioral and computational evidence. *In 42th Annual Conference of the Cognitive Science Society (CogSci)*.

Yilmaz, H., Singh, G., Egger, B., Tenenbaum, J.B., & Yildirim, I. (2021). Seeing in the dark: Testing deep neural network and analysis-by-synthesis accounts of 3D shape perception with highly degraded images. *In 42th Annual Conference of the Cognitive Science Society (CogSci)*.

Bi, W., Shah, A., Wong, K. W., Scholl, B., & Yildirim, I. (2021). Perception of soft materials relies on physics-based object representations: Behavioral and computational evidence. *In 42th Annual Conference of the Cognitive Science Society (CogSci)*.

Butkus, E.*, Belledonne, M.*, Scholl, B.J., Yildirim, I. (2020). Modeling temporal attention in dynamic scenes: Hypothesis-driven resource allocation using adaptive computation explains both objective tracking performance and subjective effort judgments. *In 41th Annual Conference of the Cognitive Science Society (CogSci)*.

Yildirim, I.*, Saeed, B.*, Bennett-Pierre G., Gerstenberg, T., Tenenbaum, J.B., & Gweon, H. (2019). Explaining intuitive difficulty judgments by modeling physical effort and risk. *In 40th Annual Conference of the Cognitive Science Society (CogSci)*.

Smith, K.*, Belledonne, M.*, Wu, J., Tenenbaum, J.B., & Yildirim, I. (2019). Real-time inference of physical properties in dynamic scenes. *In 40th Annual Conference of the Cognitive Science Society (CogSci)*.

Yildirim, I.*, Gerstenberg, T.*, Saeed, B., Toussaint, M., & Tenenbaum, J.B. (2017). Physical problem solving: Joint planning with symbolic, geometric, and dynamic constraints. *In 39th Annual Conference of the Cognitive Science Society (CogSci)*.

Yildirim, I.*, Janner M.*, Belledonne, M., Wallraven, C., Freiwald, W., & Tenenbaum, J.B. (2017). Causal and compositional generative models in online perception. *In 39th Annual Conference of the Cognitive Science Society (CogSci)*.

Yildirim, I.*, Siegel, M.*, & Tenenbaum, J.B. (2016). Perceiving Fully Occluded Objects via Physical Simulation. *In 38th Annual Conference of the Cognitive Science Society (CogSci)*.

Allen, K.R., Yildirim, I., & Tenenbaum, J.B. (2016). Integrating Identification and Perception: A case study of familiar and unfamiliar face processing. *In 38th Annual Conference of the Cognitive Science Society (CogSci)*.

Yildirim, I., Kulkarni, T.D., Freiwald, W.A., & Tenenbaum, J.B. (2015). Efficient analysis-by-synthesis in vision: A computational framework, behavioral tests, and comparison with neuronal representations. *In 37th Annual Conference of the Cognitive Science Society (CogSci)*.

Bates, C. J., Yildirim, I., Tenenbaum, J.B., & Battaglia, P.W. (2015). Humans predict liquid dynamics using probabilistic simulation. *In 37th Annual Conference of the Cognitive Science Society (CogSci)*.

Erdogan, G., Yildirim, I., & Jacobs, R. A. (2014). Transfer of object shape knowledge across visual and haptic modalities. *In 36th Annual Conference of the Cognitive Science Society (CogSci)*.

Yildirim, I. & Jacobs, R.A. (2010). A Bayesian nonparametric approach to multisensory perception. *In 32nd Annual Conference of the Cognitive Science Society (CogSci)*.

Conference abstracts

Calbick, D., Kim, J., Sohn, H., Jazayeri, M., & Yildirim, I. (2024). Uncovering neural mechanisms of mental simulation by symbolically programming RNNs. *Computational and systems neuroscience (Cosyne)*.

Shah, A., Xue, R., Lin, Q., Cao, R., Wang, S., & Yildirim, I. (2024). Single neurons in human hippocampus and amygdala track the depth-of-processing elicited by visual representations of images. *Cognitive Computational Neuroscience*.

Palmer, W., Powers, A., Cannon, T. & Yildirim, I. (2024). Developmental computational model of hallucination progression. *Society for Research in Psychopathology*.

Palmer, W., Powers, A., Cannon, T. & Yildirim, I. (2024). Developmental computational model of hallucination progression. *Computational Psychiatry*.

- Calbick, D., Yilmaz, H., McCarthy, G., & Yildirim, I. (2024). Evidence for efficient inverse graphics in the human brain using large-scale ECoG data. *Vision Science Society (VSS)*.
- Bi, W., Lin, Q., Peng, K., Shah, A., & Yildirim, I. (2024). Visual processing of soft objects automatically activates physics-based representations in the human brain. *Vision Science Society (VSS)*.
- Shah, A. & Yildirim, I. (2024). ‘Object interaction fields’: Evidence for spontaneous agentive inferences about object-object interactions in visual processing. *VSS*.
- Zhang, Y., Ongchoco, J.D.K., & Yildirim, I. (2024). From the flow of liquids to the flow of time: Granularity of spontaneous liquid flow predictions in visual perception impacts experienced time. *VSS*.
- Fagan, N., Lin, Q., Gross, J., Goldenberg, A., Chang, S., & Yildirim, I. (2024). Images of facial expressions with harder to reconstruct representations are evaluated and remembered as more intensely emotional. *VSS*.
- Yilmaz, H., Muellner, M., Tenenbaum, J.B., Dobs, K., & Yildirim, I. (2024). Efficient inverse graphics with differentiable generative models explains trial-level face discriminations and robustness of face perception to unusual viewing angles. *VSS*.
- Belledonne, M., Yildirim, I., & Scholl, B.J. (2024). The nature and computation of attentional effort: A peak/end rule integrating over moment-by-moment effort during multiple-object tracking. *VSS*.
- Sun, Z., Bi, W., Yildirim, I., & McDougle, S. (2024). Breaking down a golf swing: Spatio-temporal dynamics of visual motion underlie high-level structuring of observed actions. *VSS*.
- Erdogan, M., Bi, W., Yildirim, I., & Scholl, B.J. (2024). Are rich percepts from point-light displays specific to biological motion?: A case study of dynamic point-light cloths. *VSS*.
- Bi, W., Lin, Q., Peng, K., Shah, A., & Yildirim, I. (2023). Spontaneous visual processing of non-rigid materials recruits intuitive physical inference regions and activates physics-based representations in the human brain. *Society for Neuroscience (SfN), nanosymposium on Representations of Objects and Scenes*.
- Belledonne, M., Geller, C., & Yildirim, I. (2023). Goal-conditioned world models: Adaptive computation over multi-granular generative models explains human scene perception. *Cognitive Computational Neuroscience Conference (CCN)*.
- Yilmaz, H., Muellner, M., Tenenbaum, J.B., Dobs, K., & Yildirim, I. (2023). Efficient inverse graphics with a differentiable generative model explains robustness of perception to unusual viewing angles. *Cognitive Computational Neuroscience Conference (CCN)*.
- Calbick, D., Kim, J., & Yildirim, I. (2023). Exploring a basis set of intrinsic functions underlying neural computation by symbolically programming recurrent neural networks. *Cognitive Computational Neuroscience Conference (CCN)*.
- Calbick, D., Kim, J., Sohn, H., Jazayeri, M., & Yildirim, I. (2023). A new multi-level modeling framework provides evidence for the simulation of object dynamics in the dorsomedial frontal cortex. *Cognitive Computational Neuroscience Conference (CCN)*.
- Lin, Q., Li, Z., Lafferty, J., & Yildirim, I. (2022). Images that are harder to reconstruct are more memorable and benefit more from longer processing time. *Vision Science*

Society (VSS).

Belledonne, M. & Yildirim, I. (2022). Navigational affordances are automatically computed during scene perception: Evidence from behavioral change blindness and a computational model of active attention. *Vision Science Society (VSS).*

Zhang, Y., Bi, W., & Yildirim, I. (2022). Perception of liquids relies on generalizable, physics-based representations. Abstract presented at the *Annual Meeting of the Cognitive Science Society (CogSci).*

Yasuda, S., Yates, T., & Yildirim, I. (2021). Physical event representations: Observers spontaneously impose discrete temporal structure in intuitive physical scene understanding. *Virtual Vision Science Society (VSS).*

Belledonne, M, Butkus, E., Scholl, B.J., Yildirim, I. (2021). Attentional dynamics during multiple object tracking are explained at subsecond resolution by a new 'hypothesis-driven adaptive computation' framework. *Virtual Vision Science Society (VSS).*

Bi, W., Shah, A., Wong, K. W., Scholl, B., & Yildirim, I. (2021). Perception of soft materials relies on physics-based object representations: Behavioral and computational evidence. *Virtual Vision Science Society (VSS).*

Yilmaz, H., Shah, A. D., Letrou, A., Kumar, S., Vogels, R., Tenenbaum, J. B., & Yildirim, I. (2021). Inverse graphics explains population responses in body-selective regions of the IT cortex. *Computational and Systems Neuroscience (Cosyne).*

Wong, K. W., Bi, W., Yildirim, I., & Scholl, B. J. (2021). Seeing cloth-covered objects: A case study of intuitive physics in perception, attention, and memory. *Virtual Vision Science Society (VSS).*

Yildirim, I.*, Smith, K.*, Belledonne, M.*, Wu, J., & Tenenbaum, J.B. (2018). Neurocomputational modeling of human physical scene understanding. *In 2nd Cognitive Computational Neuroscience Conference (CCN).* [Selected as a talk.]

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

Yildirim, I. & Yolum, P. (2008). Hybrid models for achieving and maintaining collaborative symbiotic groups. *In 5th European Social Simulation Association Conference.*

Invited talks

ABC Colloquium, Center for Neuroscience Imaging Research (CNIR), Suwon, Korea; 2025.

CAMBAM-Quantitative Life Sciences Seminar, McGill University, Montreal, Canada; 2025.

Santa Fe Institute, visiting scholar, 2025.

Speaker at Symmetry and Geometry in Neural Representations, Workshop at NeurIPS, Vancouver, Canada; 2024

Speaker at Kavli Institute for Neuroscience Workshop: New Approaches in Computational Neuroscience; November 2024

Biological Sciences Training Program Colloquium, Yale University; November 2024

Speaker at IPAM (Institute for Pure & Applied Mathematics, UCLA) workshop on “Analyzing High-dimensional Traces of Intelligent Behavior”, Los Angeles; September 2024.

Speaker at Improving Concepts in Cognitive Science, Rotterdam, the Netherlands; July 2024.

Speaker at COGGRAPH Meeting, Rotterdam, the Netherlands; July 2024.

Speaker at AFOSR Cognitive Computational Neuroscience Review, Washington, DC; Oct, 2023.

Speaker at CIFAR Workshop on Foundation Models for Neuroscience, Montreal; Oct, 2022.

Speaker at Optica Fall Vision Meeting, Rochester NY; Oct, 2022.

Speaker at AFOSR Cognitive Computational Neuroscience Review, Washington, DC; Oct, 2022.

Speaker at Kickoff event for the Institute of the Foundations of Data Science, Yale University; Oct, 2022.

Computational Biology Seminar Series, Albert Einstein College of Medicine, Department of Systems and Computational Biology, Bronx, NY; May 2022.

fMRI Brown Bag Series, Dartmouth College, Hanover, NH; February 2022.

Invited speaker at the Cognitive Computational Neuroscience Generative Adversarial Collaboration “How does visual experience shape representations and transformations along the ventral stream?”, September, 2021.

Invited speaker at the Cognitive Computational Neuroscience Generative Adversarial Collaboration “How does the brain combine generative models and direct discriminative computations in high-level vision?”, September, 2021.

Sensation and Perception Seminar Series, University of California San Diego (UCSD); February 2021.

Colloquium, SUNY Optometry, New York; December 2020.

Summer Postbacs Seminar Series, Boston College, Department of Psychology. Boston; June 2019.

Special Seminar, Columbia University, Zuckerman Mind Brain Behavior Institute. New York; March 2019.

Special Seminar, University of Toronto, Departments of Psychology and Department of Statistics. Toronto, March 2019.

Special Seminar, Yale University, Department of Statistics & Data Science. New Haven, January 2019.

Special Seminar, Princeton University, Princeton Neuroscience Institute. Princeton, January 2019.

Special Seminar, Yale University, Department of Psychology. New Haven, November 2018.

Special Seminar, Columbia University, Center for Theoretical Neuroscience. New York, February 2018.

Speaker at Cognitive Neuroscience Society (CNS) Symposium, Boston, March 2018.

Speaker at Hierarchical Multisensory Integration Workshop, Barcelona, June 2017.

Special Seminar, University of Toronto, Department of Computer Science; April 2017.

Vision seminar, MIT, March 2017.

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

Speaker at Physical and Social Scene Understanding Workshop, CogSci Conference, August 2016.

Speaker at Workshop on Object vision, University Electro-Communications, Tokyo, Japan; November 2015.

Special seminar, RIKEN Institute, Tokyo, Japan; November 2015.

Face ID Challenge Workshop, MIT, September 2015.

Students and Postdocs

Wenyan Bi. Postdoc. 2020-present.

Mario Belledonne. PhD student. 2019-present. (Psychology)

Yutaro Yamada. PhD student. 2021-present. (Statistics & Data Science)

Yuting Zhang. PhD student. 2021-present. (Psychology)

Aalap Shah. PhD student. 2021-present. (Psychology)

Hakan Yilmaz. PhD student. 2022-present. (Psychology)

Daniel Calbick. PhD student. 2022-present. (Interdepartmental Neuroscience Program)

Ed Li. PhD student rotating in the lab. 2024-present. (Interdepartmental Neuroscience Program)

Postbacs (RAs with a college or Masters degree). Chloe Geller (2022-2023); Eivinas Butkus (2019-2021; now Ph.D. student at Columbia Zuckerman Institute); Aalap Shah (2020-2021; now Ph.D. student at Yale); Shannon Yasuda (2020-2021; now Ph.D. student NYU Psychology); Hakan Yilmaz (2019-2021; now Ph.D. student at Yale).

Yale Undergraduates. Richard Xu (2024-present; Dean's fellowship); Mateo Bastidas (2024-present; SEAS Undergraduate Research Experience); Witt Philips (2023-present; WTI undergrad fellowship); Serena Wang (2023; WTI undergrad fellowship); Lily Lassiter (2023; WTI undergrad fellowship [declined]); Raagav Malik (2023-present; Dean's fellowship); Fred Zhang (2022-present; S&DS senior thesis); Matt Muellner (2022-2023; Neuroscience senior thesis); Adhya Beesam (2021; Neuroscience senior thesis); Emir Akdere (2020-2021; Cognitive Science senior thesis); Masa Stanisavljevic (2020); Shannon Yasuda (2020-2021; Psychology senior thesis); Marc Harary (2020-2021); Ariadne Letrou (2019-2022; S&DS Senior thesis); Jeffrey Ma (2019-2020); Karim El Adl (2019-2020); Onyedikachi Uche (2019); Katherine Sylvester (2020-2022).

Postbacs and undergrads elsewhere. Carley Leedy (2024-present; REVU scholar from UPenn); Jen Hu (2024-present; SURF scholar from Caltech); Gargi Singh (2019-2021, from IIT).

Visiting students Dominik Glandorf (MS student through Tubingen/Yale exchange program)

Teaching

PSYC 261/561: Algorithms of the Mind (Fall 2023), Yale University

PSYC 200: Statistics (Spring 2021, Spring 2022, Fall 2024), Yale University.

PSYC 479: Computational Basis of Seeing and Thinking (Spring 2020, Fall 2021, Spring 2024), Yale University.

Service

Student committees (Yale): Dongyu Gong (first year reader); Sanghoon Kang (first year reader); Amanda McCarthy (5-person thesis committee); Sylvia Blackmore (first year reader); John Muchovej (first year reader); Aurelien Fermo (first year reader); Alec Sheffield (INP reader; thesis committee); Peiyu Liu (INP reader; thesis committee); Hui Liang Peng (BBP prospectus, thesis committee); Cameron Ellis (thesis committee), Clara Colombatto (thesis committee), Tristan Yates (prospectus, thesis committee), Viola Mocz (thesis committee), Marlene Berke (first year reader, pre-dissertation, theme essay), Kimberly Wong (first year reader, pre-dissertation, theme essay), Erica Busch (first year reader, pre-dissertation), Hanna Hillman (first year reader, pre-dissertation, prospectus), Merve Erdogan (first year reader, pre-dissertation; prospectus).

Organizer and service committees (Yale). Member, Committee on Racial Justice and Equity, Department of Psychology (2023-); Colloquium series faculty organizer, Department of Psychology (2023-); Neuroscience area search committee (2023); CogSci program search committee (2023); WTI computational search committee (2023); Neuroscience major award committee (2024); GPAC for Cognitive area (2023, 2021); Yale Workshop on Object Cognition (June 2021); Current Works in Cognitive and Developmental Areas (2020-2021); Department of Psychology Senior Thesis Award Committee (2020); STEM Dean's Undergraduate Fellowship Committee (2020).

Organizer (international conferences). Annual conference of the cognitive science society workshops committee (2023, 2024); Cosyne 2022 workshop titled "Linking phenomena across levels of analysis: The need for a new multi-level reverse-engineering toolkit". Perception as Generative Reasoning, NeurIPS 2019. Deep Learning in Computational Cognitive Science, CogSci 2017.

Reviewer for Proceedings of the National Academy of Sciences, Nature Communications, Science Advances, Cell Reports, Journal of Experiment Psychology: General, Trends in Cognitive Sciences, Human Brain Mapping, Journal of Vision, COSYNE conference, PLoS Computational Biology, Nature Communications Biology, Psychological Review, Attention, Perception & Psychophysics, IEEE PAMI, IET Computer Vision, Annual Conference of the Cognitive Science Society (CogSci), Cognitive Computational Neuroscience Conference (CCN).

Associate Editor Open Mind.

Editor Foundations and Trends (FnT) in Cognitive Science.

Grant reviewer European Research Council; Israeli Science Foundation; Fund for Scientific Research – FNRS (Belgium); NWO Veni talent program (Netherlands); NSF Panel on Integrative Neural Cognitive Systems.