Maryam Vaziri-Pashkam

MD, PhD, Research Fellow,
Laboratory of Brain and Cognition,
National Institute of Mental Health.
email: maryam.vaziri-pashkam@nih.gov
Website: maryam-vaziri.com
Google scholar page: h-index: 15, i10-index: 18

Education and Professional Experience:

Aug 2023	Assistant Professor, University of Delaware, Department of Psychological and Brain Sciences.
2017-2023	Research fellow, National Institute of Mental Health, Laboratory of Brain and Cognition, *Advisers:* Leslie Ungerleider & Chris Baker.
2011-2017	Post-Doctoral fellow, Harvard University, Department of Psychology, *Advisers:* Yaoda Xu & Ken Nakayama.
2006-2011	PhD student, Harvard University, Department of Psychology, *Adviser:* Patrick Cavanagh.
2003-2005	Medical intern, Tehran University of medical sciences.
2001-2005	Research fellow, Institute for research in fundamental sciences, Tehran.
1997-2005	Medical student, Tehran University of Medical Sciences.

Honors, awards and complementary package:

2020	NIH Fellows Award for Research Excellence (FARE).
2017	Complementary package of $100k to cover equipment and experiment running cost for the position of research fellow at NIMH.
2011	Viperlib prize for best visual illusion demonstration at the Vision Sciences Society.
2010	Harvard University dissertation completion fellowship.
2006	Harvard University tuition and fellowship award.
2001,2004	European Conference on Visual Perception (ECVP) student travel award.

Publications and Manuscripts in Preparation:

Published

34. Doustani-Desfooli N, Hossein-Zadeh GA, **Vaziri-Pashkam M**, (2023) The normalization model predicts responses during object-based attention in the human visual cortex. *eLife*, 12,

e75726.

33. Hebart MN, Contier O, Teichmann L, Rockter A, Zheng CY, Kidder A, Corriveau A, **Vaziri-Pashkam M**, Baker CI, (2023) THINGS-data: A multimodal collection of large-scale datasets for investigating object representations in brain and behavior. *eLife,* 12, e82580.

32. Roberts S, Ungerleider L, **Vaziri-Pashkam M**, (2023) Disentangling object category representations driven by dynamic and static visual input. *Journal of Neuroscience.* 43(4), 621-634.

31. Xu Y, **Vaziri-Pashkam M**, (2022) Understanding transformation tolerant visual object representations in the human brain and convolutional neural networks. *NeuroImage,* 263, 119635.

30. Mocz V, **Vaziri-Pashkam M**, Chun M, Xu Y, Predicting identity-preserving object transformations in human posterior parietal cortex and convolutional neural networks. *Journal of Cognitive Neuroscience,* 34(12), 2406-2435.

29. **Vaziri-Pashkam M**, Conway BR, (2022) How The visual system turns things the right way up. *Cognitive Neuropsychology. 1-4.*

28. Yargholi E, Hossein-Zadeh GA, **Vaziri-Pashkam M**, (2022) Two distinct networks containing position-tolerant representations of actions in the human brain. *Cerebral Cortex, bhac149*.

27. t Hart M, Achakulvisut B, …, **Vaziri-Pashkam M**, …,Wyble BA, (2022) Neuromatch Academy: a 3-week, online summer school in computational neuroscience. *Journal of Open Source Education*, 5(49).

26. DuPre E, Salo T, …, **Vaziri-Pashkam M**, Whitaker K, Handwerker DA, (2021) TE-dependent analysis of multi-echo fMRI with tedana. *Journal of Open Source Software*, 6(66), 3669.

25. Mocz V, **Vaziri-Pashkam M**, Chun M, Xu Y, (2021) Predicting identity-preserving object transformations across the human ventral visual stream. *Journal of Neuroscience,* 41 (35) 7403-7419.

24. McMahon E, Kim D, Mehr SA, Nakayama K, Spelke E, **Vaziri-Pashkam M**, (2021) The ability to predict actions of others from distributed cues is still developing in children. *Journal of Vision*, 21 (5), 14-14.

23. Xu Y, **Vaziri-Pashkam M**, (2021) Examining the coding strength of object identity and nonidentity features in human occipito-temporal cortex and convolutional neural networks. *Journal of Neuroscience*, 41 (19), 4234-4252.

22. Xu Y, **Vaziri-Pashkam M**, (2021) Limits to visual representational correspondence between convolutional neural networks and the human brain. *Nature Communications*. 12 (1), 1-16.

21. Abbas-Zadeh M, Hossein-Zadeh GA, **Vaziri-Pashkam M**, (2021) Dual-task Interference in a Simulated Driving Environment: Serial or Parallel Processing? *Frontiers in Psychology,* 11:579876.

20. Van Viegen T., Akrami A,…, **Vaziri-Pashkam M**,…, Peters MAK, (2021). Neuromatch Academy: Teaching Computational Neuroscience with Global Accessibility. *Trends in Cognitive Sciences.* 25 (7), 535-538.

19. Shafaei R, Bahrami B, **Vaziri-Pashkam M**, (2020). Effect of Perceived Interpersonal Closeness

on the Joint Simon Effect in Adolescents and Adults. *Scientific Report*, 10(1), 1-10.

18. Hart Y, **Vaziri-Pashkam M**, Mahadevan L, (2020). Early warning signals in motion inference. *PLoS Computational Biology,* 16(5), e1007821.

17. Xu Y, **Vaziri-Pashkam M**, (2019) Task modulation of the 2-pathway characterization of occipitotemporal and posterior parietal visual object representations. *Neuropsychologia*, 132, 107140.

16. McMahon EG, Zheng CY, Pereira F, Gonzalez R, Ungerleider LG, **Vaziri-Pashkam M**, (2019) Subtle predictive movements reveal actions regardless of social context. *Journal of Vision*, 19(7), 16-16.

15. **Vaziri-Pashkam M**, Taylor J, Xu Y, (2019) Spatial frequency tolerant visual object representations in the human ventral and dorsal visual processing pathways. *Journal of Cognitive Neuroscience*, 31(1), 49-63.

14. **Vaziri-Pashkam M**, Xu Y, (2019) An information-driven 2-pathway characterization of occipitotemporal and posterior parietal visual object representations. *Cerebral Cortex*, 29:2034-2050.

13. **Vaziri-Pashkam M**, Xu Y, (2017) Goal-directed visual processing differentially impacts human ventral and dorsal visual representations. *Journal of Neuroscience*, 3392-16.

12. **Vaziri-Pashkam M**, Cormiea S, Nakayama K, (2017) Predicting actions from subtle preparatory movements. *Cognition*, 168: 65–75.

11. Tadayon SE, **Vaziri-Pashkam M**, Kahali P, Ansari M, Abbasian A, (2016) Common Genetic Variant in VIT Is Associated with Human Brain Asymmetry. *Frontiers in Human Neuroscience*, 10.

10. Naber M, **Vaziri-Pashkam M**, Nakayama K, (2013) Unintended imitation affects success in a competitive game. *Proceedings of the National Academy of Sciences*, 110(50), 20046-20050.

9. Garrido L, **Vaziri-Pashkam M**, Nakayama K, Wilmer J, (2013) The consequences of subtracting the mean pattern in fMRI multivariate correlation analyses. *Frontiers in Neuroscience*,

8. **Vaziri-Pashkam M**, Cavanagh P, (2011) Effect of speed overestimation on flash lag effect at low luminance. *i-Perception*, 2:1063-1075.

7. Holcombe A, Linares D, **Vaziri-Pashkam M**, (2011) Perceiving spatial relations via attentional tracking and shifting. *Current Biology*, 21(13): 1135-1139.

6. Afraz A, **Vaziri-Pashkam M**, Cavanagh P, (2010) Spatial heterogeneity in the perception of face and form attributes. *Current Biology*, 20(23): 2112-6.

5. **Vaziri-Pashkam M**, Cavanagh P, (2008) Apparent speed increases at low luminance. *Journal of Vision*, 8(16): 9,1-12.

4. No'doust B, Afraz SR, **Vaziri-Pashkam M**, Esteky H, (2006) Attentive Object Tracking Across Vertical Meridian in a Split Brain Patient. *Brain Research,* 1076: 177-86.

3. Afraz SR, Kiani R, **Vaziri-Pashkam M**, Esteky H, (2004) Motion Induced Overestimation of the Number of Items in a Display. *Perception*, 33: 915-925.

2. Rajimehr R, **Vaziri-Pashkam M**, Afraz SR, Esteky H, (2004) Adaptation to apparent motion in crowded condition. *Vision Research*, 44(9): 925-31.

1. Afraz SR, Montaser-Kouhsari L, **Vaziri-Pashkam M**, Moradi F, (2003) Interhemispheric visual interaction in a patient with posterior callosectomy. *Neuropsychologia*, 41(5): 597-604.

Under Review & In Preparation

6. Doostani N, Hossein-Zadeh GA, Cichy R M, **Vaziri-Pashkam M,** (2023). Attention Modulates Human Visual Responses to Objects by Tuning Sharpening. Preprint on bioRxiv *(Under Review).*

5. Lam KC, Pereira F, **Vaziri-Pashkam M,** Woodard K, McMahon E, Understanding object affordances through verb usage patterns. Preprint on arXiv *(In preparation).*

4. Abbas-Zadeh M, Hossein-Zadeh GA, Seyed-Allaei S, & **Vaziri-Pashkam M**, Disturbance of information in superior parietal lobe during dual-task interference in a simulated driving task. Preprint on bioRxiv *(Under Review).*

3. Ettensohn L, Woodard K, Ungerleider L, Baker C, **Vaziri-Pashkam M**, Representations of observed and performed grasp movements do not mirror each other. *(In preparation).*

2. Mirebrahimi I, Lam KC, Zoroufi A, Pereira F, Woodard K, McMahon E, Baker C, **Vaziri-Pashkam M,** Affordance dimensions extracted from verb usage patterns are meaningful for human observers. *(In preparation).*

1. Zoroufi A, Mirebrahimi I, Woodard K, McMahon E, Ungerleider L, Ingaholm J, **Vaziri-Pashkam M**, THINGS-in-3D: a database of 3d objects with grasp kinematics and similarity ratings. *(In preparation).*

Selected Conference abstracts:

Ettensohn L, Baker C, **Vaziri-Pashkam M**, Do subjective judgements of grasp movements reflect objective kinematic information? *Vision Sciences Society,* St Pete Beach, FL, May 2022.

Zoroufi A, Mirebrahimi A, Ungerleider L, Baker C, **Vaziri-Pashkam M**, Predicting Multiple behaviors from the activity of Deep Neural Networks: Is one visual hierarchy enough? *Vision Sciences Society,* St Pete Beach, FL, May 2022.

Yargholi E, Hossein-Zadeh GA, **Vaziri-Pashkam M,** Two networks containing Position-invariant representation of actions in the human brain. *Vision Sciences Society, Virtual conference*, May 2021.

Doustani-Desfooli N, Hossein-Zadeh GA, **Vaziri-Pashkam M,** Normalization model predicts fMRI responses during object-based attention in the human visual cortex. *Vision Sciences Society, Virtual conference*, May 2021.

Contier O, Hebart M, Dickter A, Tiechmann L, Kidder A, Corriveau A, Zheng C, **Vaziri-Pashkam M**, Baker C., THINGS-fMRI/MEG: A large-scale multimodal neuroimaging dataset of responses to natural object images. *Vision Sciences Society, Virtual conference*, May 2021.

L Ettensohn, Ungerleider L, Baker C, **Vaziri-Pashkam M**, Exploring the mental representation of observed grasp actions. *Vision Sciences Society, Virtual conference*, May 2021.

Vaziri-Pashkam M, Woodard K, Ungerleider L, Representations for grasp-relevant parts of

objects in the human intraparietal sulcus. *Vision Sciences Society, Virtual conference*, June 2020.

Roberts S, Ungerleider L, **Vaziri-Pashkam M,** Motion-defined object category responses in the human brain. *Vision Sciences Society, Virtual conference*, June 2020.

Vaziri-Pashkam M, Woodard K, Ungerleider L, Representations for grasp-relevant parts of objects in the human intraparietal sulcus. *Vision Sciences Society, Virtual conference*, June 2020.

Woodard K, McMahon EG, Ungerleider L, **Vaziri-Pashkam M,** Similarity of objects based on the way they are grasped. *Vision Sciences Society, Virtual conference*, June 2020.

Mocz V, **Vaziri-Pashkam M**, Chun M, Xu Y, Transformations of object representations across the human visual processing hierarchy. *Society for Neuroscience*, Chicaho IL, October 2019.

Xu Y **& Vaziri-Pashkam M.** Goal-directed processing modulates the 2-pathway characterization of occipitotemporal and posterior parietal visual object representations. *Society for Neuroscience*, Chicaho IL, October 2019.

Xu Y **& Vaziri-Pashkam M.** Comparing visual object representational similarity in convolutional neural networks and the human ventral visual regions. *Vision Sciences Society*, St Pete Beach, FL, USA, May 2019.

McMahon E, Gonzalez R, Nakayama K, Ungerleider L, **Vaziri-Pashkam M**, Humans and Machine Learning Classifiers Can Predict the Goal of an Action Regardless of Social Motivations of the Actor. *Vision Sciences Society*, St Pete Beach, FL, USA, May 2019.

Xu Y, Taylor JM, **Vaziri-Pashkam M**, Probing mixed selectivity with fMRI voxel analysis. *Vision Sciences Society*, St Pete Beach, FL, USA, May 2018.

Vaziri-Pashkam M, Kim D, Mehr S, Nakayama K, Spelke E. Children can predict actions from subtle preparatory movements, but not as well as adults. *Fall Vision Conference,* Washington, DC. USA, October 2017.

Vaziri-Pashkam M, Xu Y, Spatial frequency tolerant object representations in the ventral and dorsal visual processing pathways. *Vision Sciences Society*, Naples Fl. USA, May 2017.

Taylor JM, **Vaziri-Pashkam M**, Xu Y, Effect of Task on Object Category Representations Across Human Ventral, Dorsal, and Frontal Brain Regions. *Vision Sciences Society*, Naples Fl. USA, May 2017.

Xu Y, **Vaziri-Pashkam M**, Rediscovering the ventral and dorsal pathways of visual information processing. *Society for Neuroscience*, San Diego CA. USA, November 2016.

Vaziri-Pashkam M, Cormiea S, Gonzalez R, Subtle preparatory movements reveal future actions. *Society for Neuroscience*, San Diego *CA. USA,* November 2016.

Vaziri-Pashkam M, Xu Y, Effect of Attention on Object Responses in Human Parietal and Occipital-temporal Cortices: Similarities and Differences. *Vision Sciences Society*, Naples Fl. USA, May 2016.

Vaziri-Pashkam M, Cormiea S, Nakayama K, Predicting future actions. *Society for the Neural Control of Movement*, Montego Bay, Jamaica, April 2016.

Vaziri-Pashkam M, Xu Y, Attentional modulation of object category decoding in human parietal and occipito-temporal regions. *Society for Neuroscience*, Chicaho IL, October 2015.

Cormiea S, **Vaziri-Pashkam M**, Nakayama K, Unconscious perception of an opponent's goal. *Society for Neuroscience,* Chicaho IL, October 2015.

Vaziri-Pashkam M, Xu Y, Object representations in human parietal and occipito-temporal cortices: similarities and differences. V*ision Sciences Society*, Naples Fl, May 2015.

Vaziri-Pashkam M, Xu Y, Decoding invariant visual object representations in human parietal cortex. *Society for Neuroscience*, Washington DC, November 2014.

Vaziri-Pashkam M, Xu Y, Decoding visual object representation in human parietal cortex. V*ision Sciences Society*, Naples Fl, May 2014.

Vaziri-Pashkam M, Bettencourt P, Xu Y, Contribution of human parietal cortex to object categorization under uncertainty. *Society for Neuroscience*, NewOrleans LA, October 2012.

Teaching, Mentoring, Outreach, and Departmental Service:

Teaching:

2021	A workshop on "Programming behavioral experiments with MATLAB" for undergraduate students in Iran participating in a cognitive neuroscience competition program.
2013,2015	Graduate courses, Institute for research in fundamental sciences. *Courses:* 1) Understanding object recognition using fMRI. 2) The study of visual consciousness using behavioral techniques.
2008	Graduate course on Intermediate statistical analysis (as a teaching fellow), Department of Psychology, Harvard University.
2016, 2017	A workshop on fMRI analysis, Institute for research in fundamental sciences & Massachusetts Institute of Technology.

Mentoring:

2017-present	Four research assistants at the NIMH.
2011-present	Three undergraduate, six medical students, three graduate students, and a postdoc at a research institute (IPM) in Iran.
2011-2017	Seven undergraduate students and research assistants at Harvard University.

Outreach:

2021	Mentoring high school student groups in Iran participating in a neuroscience competition program in their research projects.
2021	Mentoring (virtually) a female high school students from Florida that contacted me with questions about how to run an experiment in her high school.
2020	Participating in the organization of Neuromatch Academy an online summer school in computational neuroscience, aimed at increasing diversity in computational neuroscience.

2014	Brain awareness week, Harvard University: Demonstrations of visual illusions for high school students from underserved areas.
2013	Guest Lecturer at the Summer Workshop for Teachers, Center for Brain, Minds, and Machines, Massachusetts Institute of Technology. *Topic:* Human Visual Perception.
2013	Mentoring two summer high school students from underserved areas around the globe through the research science institute based at MIT.
2013	Mentoring two female high school students from a small town in Massachusetts that contacted me expressing interest in being part of the lab.
2010, 2011	Demonstration of visual illusions at the Demo Night at Vision Sciences Society.
1997-now	Offering career advice to numerous students at various levels of their career from high school to medical and graduate school in Iran.

Departmental service:

2008-2014	Concentration adviser, Department of Psychology, Harvard University.

Invited talks:

"Beyond Labeling THINGS-in-3D: Is one Visual Hierarchy enough?"

2020 Shared Visual Representations in Human & Machine Intelligence (SVHRM), NeurIPS.

"Visual Processing of Object Shapes and Body Movements for Action"

2020 Department of Psychology, University of California San Diego.

"Object Responses in the Human Dorsal and Ventral Visual Streams"

2019 Department of Psychology, George Washington University.
2019 Keynote speaker, Iranian Symposium on Brain Mapping.
2019 Capital Area Cognition, Attention, and Perception Conference.
2017 Department of psychology, Johns Hopkins University.
2015 Visual attention lab (PI: Jeremy Wolfe), Harvard Medical School.
2015 Kanwisher lab, Massachusetts Institute of Technology.

"Predicting Actions From Preparatory Movements"

2019 Department of Psychology, Gettysburg college.
2018 Department of Psychology, University of California Berkeley.

"Speed Perception and action at Low Luminance"

2012 Guest Lecturer at Department of psychology, Boston University.
Course: Neural and Computational Models of Vision.

2011 Pascual Leone's lab, Harvard Medical School

Membership:
Society for Neuroscience, Vision Science Society, Society for the Neural Control of Movement.

Reviewer for:
PNAS, Nature Human Behavior, Cerebral Cortex, Journal of Neuroscience, Journal of Cognitive Neuroscience, Neuroscience, Neuropsychologia, Neuroimage, Journal of Vision, Vision Research, Journal of Experimental Psychology: HPP, PLoS ONE, Journal ofComparative Psychology, Cognition, Attention Perception and Psychophysics, ERC synergy grants, and Computational Cognitive Neuroscience (CCN) conference.