

# Maryam Vaziri-Pashkam

MD, PhD, Assistant Professor,  
Department of Psychological and Brain Sciences,  
University of Delaware.

email: [mvaziri@udel.edu](mailto:mvaziri@udel.edu)

Website: [maryam-vaziri.com](http://maryam-vaziri.com)

[Google scholar page](#): h-index: 16, i10-index: 19

## Education and Professional Experience:

|              |  |
|--------------|--|
| Aug 2023-now | Assistant Professor, University of Delaware<br>Department of Psychological and Brain Sciences.   |
| 2017-2023    | Research fellow, National Institute of Mental Health,<br>Laboratory of Brain and Cognition,<br><i>Advisers</i> : Leslie Ungerleider & Chris Baker. |
| 2011-2017    | Post-Doctoral fellow, Harvard University,<br>Department of Psychology,<br><i>Advisers</i> : Yaoda Xu & Ken Nakayama.                               |
| 2006-2011    | PhD student, Harvard University,<br>Department of Psychology,<br><i>Adviser</i> : 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

36. Xu Y, **Vaziri-Pashkam M**, (2023) Using DNNs to understand the primate vision: A shortcut or a distraction? Invited commentary for Bowers et al. *Behavioral Brain Sciences*, *in press*.

35. 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.
34. Abbas-Zadeh M, Hossein-Zadeh GA, Seyed-Allaei S, **Vaziri-Pashkam M**, (2023) Disturbance of information in superior parietal lobe during dual-task interference in a simulated driving task. *Cortex*, 167, 235-246.
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. McMahan 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 callosotomy. *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*).

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, Chicago 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, Chicago 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*, Chicago IL, October 2015.

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

**Vaziri-Pashkam M**, Xu Y, Object representations in human parietal and occipito-temporal cortices: similarities and differences. *Vision 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. *Vision 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*, New Orleans 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 of Comparative Psychology, Cognition, Attention Perception and Psychophysics, ERC synergy grants, and Computational Cognitive Neuroscience (CCN) conference.