

CV – Reza Rajimehr

Visiting Scientist
School of Cognitive Sciences
Institute for Research in Fundamental Sciences (IPM)

Research Affiliate
McGovern Institute for Brain Research
Massachusetts Institute of Technology (MIT)

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Education:

PhD, 2019 - 2022
MRC Cognition and Brain Sciences Unit, University of Cambridge
Advisor: John Duncan
PhD thesis: Exploring the functional organization of cerebral cortex using data from the Human Connectome Project (<https://doi.org/10.17863/CAM.100132>)

MD, 1996 - 2004
School of Medicine, Iran University of Medical Sciences
MD thesis: Psychophysical investigation of visual awareness

Research Experience:

Visiting Scientist, 2018
Department of Electrical and Computer Engineering, University of Tehran

Research Scientist, 2015 - 2017
McGovern Institute for Brain Research, Massachusetts Institute of Technology

Postdoctoral Associate, 2009 - 2014
McGovern Institute for Brain Research, Massachusetts Institute of Technology
Advisor: Robert Desimone

Postdoctoral Research Fellow, 2005 - 2008
Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Harvard Medical School
Advisor: Roger Tootell

Researcher, 2001 - 2004
School of Cognitive Sciences, Institute for Research in Fundamental Sciences (IPM)
Advisor: Hossein Esteky

Research Interests:

- Functional organization of cerebral cortex in humans and monkeys
- Visual neuroscience

- Object recognition, face and scene perception

Laboratory and Computer Skills:

- Human fMRI, Monkey fMRI, Visual psychophysics, Monkey electrophysiology, Optogenetics
- Matlab, PsychToolbox, C, Delphi, Unix bash/csh scripting, FreeSurfer, FS-FAST, Caret, Connectome Workbench, Cortex, SPSS

Memberships:

- Organization for Human Brain Mapping (OHBM)
- Society for Neuroscience (SfN)
- Vision Sciences Society (VSS)

Ad Hoc Reviewer:

- Basic and Clinical Neuroscience
- Behavioural Brain Research
- Brain Connectivity
- Brain Structure and Function
- Cerebral Cortex
- eNeuro
- European Journal of Neuroscience
- Frontiers in Behavioral Neuroscience
- Human Brain Mapping
- Journal of Cognitive Neuroscience
- Journal of Neuroscience
- Journal of the Optical Society of America A
- Journal of Vision
- Nature Neuroscience
- NeuroImage
- Neuroscience
- Neuroscience & Biobehavioral Reviews
- PLoS One
- Psychiatry Research: Neuroimaging
- Scientific Data

Teaching:

- fMRI course. School of Cognitive Sciences, IPM.
- Vision course. School of Cognitive Sciences, IPM.
- Human Visual System course. Department of Electrical and Computer Engineering, University of Tehran. 2018.
- Cognitive Neuroscience journal club. School of Cognitive Sciences, IPM.
- Neuroimaging journal club. School of Cognitive Sciences, IPM. 2014-2018.

Organizer of Workshop/Symposium:

- Workshop, Human Connectome Project, IPM and National Brain Mapping Lab
- Workshop, Freesurfer, IPM and National Brain Mapping Lab
- Workshop, Computational mechanisms of object recognition in the ventral visual pathway, Cosyne, 2015
- Symposium, What does fMRI tell us about brain homologies?, VSS, 2012

Awards:

Young researcher award, Iranian Academy of Medical Sciences

Publications:

- 1) Rajimehr R, Xu H, Farahani A, Kornblith S, Duncan J, Desimone R. Functional architecture of cerebral cortex during naturalistic movie watching. *Neuron*. 112: 4130-4146.e3 (2024).
- 2) Dehghani Tafti M, Ahmadzad-Asl M, Memarian G, Fallah Tafti M, Rajimehr R, Soltani S, Mirfazeli FS, Vahabie A-H, Moein ST, Mozaffar F. Personality traits can predict architectural preferences: A machine learning approach. *Psychol Aesthet Creat Arts*. 18: 750-761 (2024).
- 3) Abdolalizadeh A, Moradi K, Dabbagh Ohadi MA, Mirfazeli FS, Rajimehr R. Larger left hippocampal presubiculum is associated with lower risk of antisocial behavior in healthy adults with childhood conduct history. *Sci Rep*. 13: 6148 (2023).
- 4) Rajimehr R, Firoozi A, Rafipoor H, Abbasi N, Duncan J. Complementary hemispheric lateralization of language and social processing in the human brain. *Cell Rep*. 41: 111617 (2022).
- 5) Afzalian N, Rajimehr R. Spatially Adjacent Regions in Posterior Cingulate Cortex Represent Familiar Faces at Different Levels of Complexity. *J Neurosci*. 41: 9807-9826 (2021).
- 6) Farzmahdi A, Fallah F, Rajimehr R, Ebrahimpour R. Task-dependent neural representations of visual object categories. *Eur J Neurosci*. 54: 6445-6462 (2021).
- 7) Milham MP, et al. PRIMatE Data Exchange (PRIME-DE) Global Collaboration Workshop and Consortium. Accelerating the Evolution of Nonhuman Primate Neuroimaging. *Neuron*. 105: 600-603 (2020).
- 8) Abbasi N, Duncan J, Rajimehr R. Genetic influence is linked to cortical morphology in category-selective areas of visual cortex. *Nat Commun*. 11: 709 (2020).
- 9) Yargholi E, Hossein-Zadeh GA, Rajimehr R. Predicting Blood Oxygenation Level-Dependent Activity in Fusiform Face Area from the Activity in Other Visual Areas. *Brain Connect*. 9: 329-340 (2019).
- 10) Milham MP, Ai L, Koo B, Xu T, Amiez C, Balezeau F, Baxter MG, Blezer ELA, Brochier T, Chen A, Crosson PL, Damatac CG, Dehaene S, Everling S, Fair DA, Fleysher L, Freiwald W, Froudust-Walsh S, Griffiths TD, Guedj C, Hadj-Bouziane F, Ben Hamed S, Harel N, Hiba B, Jarraya B, Jung B, Kastner S, Klink PC, Kwok SC, Laland KN, Leopold DA, Lindenfors P, Mars RB, Menon RS, Messinger A, Meunier M, Mok K, Morrison JH, Nacef J, Nagy J, Rios MO, Petkov CI, Pinsk M, Poirier C, Procyk E, Rajimehr R, Reader SM, Roelfsema PR, Rudko DA, Rushworth MFS, Russ BE, Sallet J, Schmid MC, Schwiedrzik CM, Seidlitz J, Sein J, Shmuel A, Sullivan EL, Ungerleider L, Thiele A, Todorov OS, Tsao D, Wang Z, Wilson CRE, Yacoub E, Ye FQ, Zarco W, Zhou YD, Margulies DS, Schroeder CE. An Open Resource for Non-human Primate Imaging. *Neuron*. 100: 61-74.e2 (2018).

- 11) Abbasi N, Mohajer B, Abbasi S, Hasanabadi P, Abdolalizadeh A, Rajimehr R. Relationship between cerebrospinal fluid biomarkers and structural brain network properties in Parkinson's disease. *Mov Disord.* 33: 431-439 (2018).
- 12) Emadi N, Rajimehr R, Esteky H. High baseline activity in inferior temporal cortex improves neural and behavioral discriminability during visual categorization. *Front Syst Neurosci.* 8: 218 (2014).
- 13) Rajimehr R, Nasr S, Tootell R. Deconstructing Scene Selectivity in Visual Cortex. In: 'Scene Vision: Making Sense of What We See' (Kveraga K and Bar M, Eds.). MIT Press, Cambridge, MA, pp. 73-84 (2014).
- 14) Rajimehr R, Bilenko NY, Vanduffel W, Tootell RB. Retinotopy versus face selectivity in macaque visual cortex. *J Cogn Neurosci.* 26: 2691-2700 (2014).
- 15) Nasr S, Liu N, Devaney KJ, Yue X, Rajimehr R, Ungerleider LG, Tootell RB. Scene-selective cortical regions in human and nonhuman primates. *J Neurosci.* 31: 13771-13785 (2011).
- 16) Han X, Chow BY, Zhou H, Klapoetke NC, Chuong A, Rajimehr R, Yang A, Baratta MV, Winkle J, Desimone R, Boyden ES. A high-light sensitivity optical neural silencer: development and application to optogenetic control of non-human primate cortex. *Front Syst Neurosci.* 5: 18 (2011).
- 17) Rajimehr R, Devaney KJ, Bilenko NY, Young JC, Tootell RB. The "parahippocampal place area" responds preferentially to high spatial frequencies in humans and monkeys. *PLoS Biol.* 9: e1000608 (2011).
- 18) Rajimehr R, Tootell RB. Does retinotopy influence cortical folding in primate visual cortex? *J Neurosci.* 29: 11149-11152 (2009).
- 19) Rajimehr R, Young JC, Tootell RB. An anterior temporal face patch in human cortex, predicted by macaque maps. *Proc Natl Acad Sci USA.* 106: 1995-2000 (2009).
- 20) Tootell RB, Devaney KJ, Young JC, Postelnicu G, Rajimehr R, Ungerleider LG. fMRI mapping of a morphed continuum of 3D shapes within inferior temporal cortex. *Proc Natl Acad Sci USA.* 105: 3605-3609 (2008).
- 21) Rajimehr R, Tootell RB. Organization of Human Visual Cortex. In: 'The Senses: A Comprehensive Reference' (Vol. 1: Vision I). Elsevier, Oxford, UK, pp. 595-614 (2007).
- 22) Sasaki Y, Rajimehr R, Kim BW, Ekstrom LB, Vanduffel W, Tootell RB. The radial bias: a different slant on visual orientation sensitivity in human and nonhuman primates. *Neuron.* 51: 661-670 (2006).
- 23) Montaser-Kouhsari L, Rajimehr R. Subliminal attentional modulation in crowding condition. *Vision Res.* 45: 839-844 (2005).
- 24) Montaser-Kouhsari L, Rajimehr R. Attentional modulation of adaptation to illusory lines. *J Vis.* 4: 434-444 (2004).
- 25) Rajimehr R. Static motion aftereffect does not modulate positional representations in early visual areas. *Brain Res Cogn Brain Res.* 20: 323-327 (2004).

- 26) Rajimehr R, Vaziri-Pashkam M, Afraz SR, Esteky H. Adaptation to apparent motion in crowding condition. *Vision Res.* 44: 925-931 (2004).
- 27) Rajimehr R. Unconscious orientation processing. *Neuron.* 41: 663-673 (2004).
- 28) Rajimehr R, Montaser-Kouhsari L, Afraz SR. Orientation-selective adaptation to crowded illusory lines. *Perception.* 32: 1199-1210 (2003).
- 29) Rajimehr R, Farsiu S, Kouhsari LM, Bidari A, Lucas C, Yousefian S, Bahrami F. Prediction of lupus nephritis in patients with systemic lupus erythematosus using artificial neural networks. *Lupus.* 11: 485-492 (2002).
- 30) Rajimehr R, Montaser Kouhsari L. Neurobiological modeling of bursting response during visual attention. In: 'Lecture Notes in Computer Science' (Vol. 2084). Springer-Verlag, London, UK, pp. 72-80 (2001).

Conference Abstracts:

- 1) Izadkhah M, Farahani A, Yargholi E, Hossein-Zadeh GA, Rajimehr R. Functional organization of face-responsive regions in lateral prefrontal cortex. OHBM 2022, Poster.
- 2) Rajimehr R, Firoozi A, Rafipoor H, Abbasi N, Duncan J. Complementary hemispheric lateralization of language and social processing in the human brain. SNL 2021, Talk.
- 3) Borzabadi Farahani A, Yargholi E, Hossein-Zadeh GA, Rajimehr R. Three cortical networks for perceptual, semantic, and social processing of faces. OHBM 2021, Poster.
- 4) Abbasi N, Duncan J, Rajimehr R. Genetic influence is linked to cortical morphology in category-selective areas of visual cortex. OHBM 2020, Talk.
- 5) Afzalian N, Rajimehr R. Neural representation of social categories of familiar faces in human brain. ECVP 2019, Talk.
- 6) Rajimehr R, Xu H, Tsao DY, Desimone R. Functional parcellation of lateral prefrontal cortex in macaques. SfN 2017, Poster.
- 7) Yargholi E, Hossein-Zadeh GA, Rajimehr R. Predicting BOLD activity in FFA from the activity in other visual areas. OHBM 2016, Poster.
- 8) Rajimehr R, Kornblith S, Desimone R. Functional parcellation of human visual cortex. VSS 2014, Talk.
- 9) Rajimehr R, Kornblith S, Desimone R. Functional parcellation of human visual cortex. SfN 2013, Poster.
- 10) Rajimehr R, Gregoriou G, Zhou H, Desimone R. Feature-based synchrony between prefrontal cortex and V4 during visual attention. SfN 2010, Talk.
- 11) Han X, Chow BY, Yang A, Zhou H, Rajimehr R, Klapoetke N, Chuong A, Desimone R, Boyden ES. Temporally precise optical neural silencing in the nonhuman primate brain. SfN 2010, Poster.

- 12) Rajimehr R, Tootell RBH. Does retinotopy influence cortical folding in primate visual cortex? SfN 2008, Talk.
- 13) Devaney KJ, Rajimehr R, Tootell RBH. Placing the place-selective cortical areas: localization in humans and monkeys. SfN 2008, Talk.
- 14) Rajimehr R, Devaney K, Young J, Postelnicu G, Tootell R. The 'Parahippocampal Place Area' responds selectively to high spatial frequencies in humans and monkeys. VSS 2008, Talk.
- 15) Bilenko NY, Rajimehr R, Young JC, Tootell RBH. The visual cortical 'word form area' is selective for high spatial frequencies in humans but not monkeys. VSS 2008, Poster.
- 16) Rajimehr R, Vanduffel W, Tootell R. Retinotopy versus category specificity throughout primate cerebral cortex. VSS 2007, Talk.
- 17) Rajimehr R, Afraz S-R. Right hemisphere dominance in attentional processing and spatiotopic representation of visual stimuli during serial search tasks. VSS 2006, Poster.
- 18) Sasaki Y, Rajimehr R, Kim BW, Knutsen T, Ekstrom L, Dale A, Vanduffel W, Tootell R. The radial orientation effect in human and non-human primates. VSS 2006, Poster.
- 19) Rajimehr R, Ekstrom LB, Vanduffel W, Tootell RBH. Retinotopic mapping in higher cortical areas of macaque cerebral cortex. SfN 2005, Talk.
- 20) Rajimehr R. Anisotropic center-surround antagonism in visual motion perception. VSS 2005, Poster.
- 21) Montaser Kouhsari L, Rajimehr R. Attentional modulation of orientation adaptation to resolvable and unresolvable patterns using brief orientation adaptation paradigm. VSS 2005, Poster.
- 22) Rajimehr R. Attentional orienting in different directions of depth modulates representation of 3-D objects in visual system. SfN 2004, Poster.
- 23) Rajimehr R. Static motion aftereffect does not modulate positional representations in early visual areas. ECVF 2004, Poster.
- 24) Montaser Kouhsari L, Rajimehr R. Attentional modulation of brief orientation adaptation to unresolvable patterns. ECVF 2004, Talk.
- 25) Rajimehr R. Perceptual modulation of orientation-selective adaptation. VSS 2004, Poster.
- 26) Montaser Kouhsari L, Rajimehr R. Subliminal attentional modulation in crowding condition. VSS 2004, Poster.
- 27) Rajimehr R. Orientation information of unresolvable Gabor patches primes ambiguous motion but not serial search. ECVF 2003, Talk.
- 28) Rajimehr R. Invisibility patterns of unresolvable Gabor patches in motion induced blindness. IBRO 2003, Poster.
- 29) Rajimehr R. Color-contingent orientation adaptation for unresolvable Gabor patches. VSS 2003, Poster.

- 30)** Montaser Kouhsari L, Rajimehr R. Attention dependent illusory line-tilt aftereffect. VSS 2003, Poster.
- 31)** Bahrami B, Rajimehr R. The role of feature-dependent backward masking in perceptual asynchrony. ECVF 2002, Poster.
- 32)** Rajimehr R, Vaziri-Pashkam M, Afraz S-R, Esteky H. Adaptation to apparent motion in the crowding condition. FENS 2002, Poster.
- 33)** Montaser Kouhsari L, Rajimehr R, Afraz S-R, Esteky H. Visual illusion without awareness. VSS 2002, Poster.
- 34)** Montaser Kouhsari L, Rajimehr R. Computational modeling of spatial cueing in visual attention. ECVF 2001, Poster.