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Professional Experience

2021- Assistant Professor, Sungkyunkwan University (SKKU), Suwon, South Korea
2019-2021 Research Associate, Harvard University, Cambridge, MA, USA
2014-2019 Postdoctoral Fellow, Harvard University, Cambridge, MA, USA (Faculty advisor: Naoshige Uchida)
2013-2014 Postdoctoral Associate, University of Rochester, NY, USA (Faculty advisor: Gregory DeAngelis)
2001-2004 Software Engineer, Korea WISENut

Education

2013 Ph.D. in Brain and Cognitive Sciences, University of Rochester, NY, USA. Advisor: Gregory DeAngelis
2007 M.S. in Neuroscience Program, Seoul National University, Seoul, Korea. Advisor: Choongkil Lee
2005 B.S. in Computer Science and Engineering, Seoul National University, Seoul, Korea

Peer-reviewed Publications

Kim HR, Angelaki DE, DeAngelis GC (2022) A neural mechanism for detecting object motion during self-motion. eLife 11, e74971.

Mikhael JG*, Kim HR*, Uchida N, Gershman SJ (2022) The role of state uncertainty in the dynamics of dopamine. Current Biology 32(5), 1077-1087

Kim HR*, Malik AM*, Mikhael JG, Bech P, Tsutsui-Kimura I, Sun F, Zhang Y, Li Y, Watabe-Uchida M, Gershman SJ, Uchida N (2020) A unified framework for dopamine signals across timescales. Cell 183(6), 1600-1616 (lead author)

Kim HR, Angelaki DE, DeAngelis GC (2017) Gain Modulation as a Mechanism for Coding Depth from Motion Parallax in Macaque Area MT. Journal of Neuroscience 37 (34), 8180-8197

Kim HR, Pitkow X, Angelaki DE, DeAngelis GC (2016) A simple approach to ignoring irrelevant variables by population decoding based on multisensory neurons. Journal of Neurophysiology 116 (3), 1449-1467

Kim HR, Angelaki DE, DeAngelis GC (2016) The neural basis of depth perception from motion parallax. Philosophical Transactions of the Royal Society B: Biological Sciences 371 (1697) [Review article]

Kim HR, Angelaki DE, DeAngelis GC (2015) A novel role for visual perspective cues in the neural computation of depth. Nature Neuroscience 18(1), 129-137. (Highlighted in News and Views)

Kim HR, Angelaki DE, DeAngelis GC (2015) A Functional Link between MT Neurons and Depth Perception Based on Motion Parallax. Journal of Neuroscience 35 (6), 2766-2777

Nadler JW, Barbash D, Kim HR, Shimpi S, Angelaki DE, DeAngelis GC (2013) Joint Representation of Depth from Motion Parallax and Binocular Disparity Cues in Macaque Area MT. Journal of Neuroscience 33 (35), 14061-14074

Kim T, Kim HR, Kim K, Lee C (2012) Modulation of V1 Spike Response by Temporal Interval of Spatiotemporal Stimulus Sequence. PLoS ONE 7(10):e47543. doi:10.1371/journal.pone.0047543

Lee J, Kim HR, Lee C (2010) Trial-to-trial variability of spike response of V1 and saccadic response time. Journal of Neurophysiology 104 (5), 2556-2572

Honors and Awards

2019 SfN travel grant, International Brain Research Organization (IBRO) World Congress 2019
2019 Travel grant, Computational and Systems Neuroscience (Cosyne) 2019
2018 Meselson Prize for the Most Beautiful Experiment, Dept. of Molecular and Cellular Biology, Harvard University
1999-05 Undergraduate Scholarship, Korea Foundation for Advanced Studies

Selected Talks and Seminars

Diverse dopamine signals during spatial navigation, Bernstein Network Computational Neuroscience 2021

Spiking activity of VTA dopamine neurons during spatial navigation, Virtual Dopamine Symposium: The Future of Dopamine, 2020

A unified framework for dopamine signals across timescales, Simons Collaboration on the Global Brain Boston-area Postdoc Meeting Series, 2020

What does a dopamine ramp mean?, Cosyne 2019 Main Meeting, Lisbon, Portugal

A derivative-like computation underlies dopamine prediction error coding based on dynamic sensory stimuli, SfN 2018 Nanosymposium 109.09

Constructing a three-dimensional world during self-motion: Neural mechanisms of depth perception and moving object detection in macaque monkeys, Neurolunch seminar, Center for brain science, 2014

Dynamic perspective as a proxy for smooth pursuit in coding depth sign from Motion parallax in area MT, OSA Vision Meeting 2012 Contributed vision session

Estimation of heading in the presence of moving objects: A functional role for 'opposite' cells in area MSTd?, SfN 2010 Nanosymposium 731.2

Selected Conference Posters

Masset P*, Kim HR*, Malik AN*, Pol B, Uchida N, Diversity of discounting horizons explains ramping diversity in dopaminergic neurons, NeurIPS workshop on Biological and Artificial Reinforcement Learning 2020

Kim HR, Malik AN, Uchida N, Dopamine ramping is a prediction error signal in a dynamic environment, IBRO 2019

Kim HR, Uchida N, Phasic whisking-related dopamine activity response in the dorsolateral striatum correlates with specific movements, SfN 2017

Kim HR, Angelaki DE, DeAngelis GC, Detecting moving objects based on cue conflict between disparity and motion parallax: Behavior and physiology, SfN 2014

Kim HR, Angelaki DE, DeAngelis GC, Gain modulation by eye movements as a mechanism for representing depth from motion parallax in area MT, SfN 2013

Kim HR, Angelaki DE, DeAngelis GC, Dynamic perspective cues can substitute for smooth pursuit in coding depth sign from motion parallax in area MT, SfN 2012

Kim HR, Angelaki DE, DeAngelis GC, Neural correlates of depth perception from motion parallax in macaque area MT, SfN 2011

H. Kim, J. Lee, C. Lee, Information of saccade direction in post-saccadic discharge in the primate V1 neurons, SfN 2007

J. Lee, H. Kim, C. Lee, Roles of neural activity in the monkey V1 for saccadic response time variability, SfN 2007

T. Kim, H. Kim, C. Lee, Response selectivity of V1 neurons for spatiotemporal sequence of stimulus orientation, SfN 2007

Teaching and Mentoring

- 2021- Teaching *Anatomy and Physiology* and *Introductory Biomedical Engineering Lab*
- Mentored two rotating graduate students, one master student, two postdoctoral fellow, and one undergraduate student in the Uchida Lab, Harvard University.
- Teaching Assistant in Sensory and Motor Neuroscience, Brain and Cognitive Sciences, University of Rochester

Memberships, Skills, and Qualifications

- Society for Neuroscience
- GitHub repository: Personal (https://github.com/hkim09), Lab (https://github.com/HRKimLab)