

Position

2020.09 - Postdoctoral associate, Dept of Brain and Cognitive Science, Massachusetts Institute of Technology
- Advisor: Dr. Mehrdad Jazayeri

Education

2018.09 - 2020.08 Ph.D. Dept. of Neuroscience, University of Minnesota, Twin Cities,
- Advisor: Dr. Benjamin Hayden
2015.09 - 2018.09 M.A. Dept. of Brain and Cognitive Sciences, University of Rochester, Rochester
- Advisor: Dr. Benjamin Hayden
2013.03 - 2015.02 M.Sc. Dept. of Brain and Cognitive Sciences, Seoul National University, South Korea
- Advisor: Dr. Sang-Hun Lee
2004.03 - 2012.02 B.Sc. Dept. of Life Science, Handong University, South Korea
- Double major: Biomedical science and Psychology

Publications

Peer-reviewed

- **Yoo SBM**, Tu JC & Hayden BY Multicentric tracking of multiple agents by anterior cingulate cortex during pursuit and evasion. *Nature Communications*. (2021)
- **Yoo SBM**, Hayden BY, Pearson JM. Continuous decision making. *Philosophical Transaction of Royal Society B*. (2021)
- Bala PC, Eisenriech BR, **Yoo SBM**, Hayden BY, Park HS & Zimmermann J. OpenMonkeyStudio: Automated Markerless Pose Estimation in Freely Moving Macaques, *Nature Communications* (2020)
- **Yoo SBM**, Tu JC, Piantadosi ST & Hayden BY. Neural basis of predictive pursuit. *Nature Neuroscience* (2020)
- **Yoo SBM** & Hayden BY. The transition from evaluation to selection involves neural subspace reorganization in core reward regions. *Neuron*. (2020)
- **Yoo SBM** & Hayden BY. Economic decision as untangling from option to actions. *Neuron*. (2018)
- **Yoo SBM**, Slezacek B & Hayden BY. Robust encoding of spatial information in orbitofrontal cortex and striatum. *Journal of Cognitive Neuroscience*. (2018)
- Cash-Padgett T, Azab A, **Yoo SBM** & Hayden BY. Opposing pupil responses to offered and anticipated reward values. *Animal Cognition*. (2018)
- Roh J, Rymer WZ, Perreault EJ, **Yoo SB** & Beer RF. Alterations in upper limb muscle synergy structure in chronic stroke survivors. *Journal of Neurophysiology*. (2013)

Under review and in preparation

- **Yoo SBM**, Hayden BY, Herman A Neural subspace for understanding design principles of brain (invited review from *The Neuroscientists*)
- Mehta M*, **Yoo SBM*** & Hayden BY. Globally vs. locally directed cognitive control of ventromedial prefrontal subspace. (under review, *Science Advances*)
- Cash-Padgett T, Hayden BY & **Yoo SBM**. Economic decision-making as dynamical systems (*in preparation*)

Conference Posters & Proceedings

- **Yoo SBM**, Kusmierz L, Hayden BY & Toyozumi T Can brain perform second order optimization? *Cognitive Computational Neuroscience 2019*.
- Willke TL, **Yoo SBM**, Capota M, Musslick S, Hayden BY & Cohen JD A comparison between nonhuman primate and deep reinforcement learning agent performance in a virtual pursuit-avoidance task. *Reinforcement Learning and Decision Making 2019*.
- **Yoo SBM**, Iqbal S, Hayden BY, Pearson JM Using Generative Adversarial Networks to estimate agent goals in

- a Pacman-like virtual hunting experiment. *Society for Neuroscience*, 2017.
- **Yoo SBM**, Piantadosi ST, Hayden BY How macaque predicts target location in dynamic pursuit task. *Society for Neuroscience*, 2016.
- **Yoo SBM**, Hayden BY Spatial tuning for both manual and oculomotor movement in dorsal anterior cingulate cortex neurons and temporal profiles of the tuning. *Gordon Conference for Neurobiology and Cognition*, 2016.
- Lim DS*, **Yoo SB***, Lee SL Phoneme perception as Bayesian inference with a narrow-tuned multimodal prior. *Computational and Systems Neuroscience*, 2015.
- Yeom H, Roh J, Yoon U, **Yoo SB**, Rymer WZ, Beer RF, 2012, ECG detection using a convolution wavelet algorithm for denoising of surface EMG. IEEE, 2012 *International Conference on Information Science and Technology*, 2012.
- Roh J, Rymer WZ, Perreault EJ, **Yoo SB** Beer RF Alterations in upper limb muscle synergy structure in chronic stroke survivors. *Society for Neuroscience*, 2011.

Invited Talks

- 2019 Computational and Systems Neuroscience 2019 Workshop (Hosted by Drs. Amitai Shenhav and Candace Raio)
- 2019 Oregon Health and Science University (PI: Stephen David)
- 2019 Society for Neuroscience 2019 (SFN) Nano-symposium (Session chair)
- 2019 RIKEN invited talk (PI: Taro Toyozumi, travel expense supported)
- 2019 Duke university invited talk (PI: John Pearson, travel expense supported)
- 2020 Brown university invited talk (PI: Amitai Shenhav, virtual format)
- 2020 University of Minnesota invited talk for Medical Discovery Team seminar
- 2020 Institute of Basic Science South Korea (PI: Seong Gi Kim, virtual format)

Awards, Scholarships, and Fellowships

- 2019 Externship, University of Minnesota (USD \$8,000/2months)
- Visiting Dr. Bingni Bruton Lab at University of Washington
- 2013 - 2015 Brain Korea 21 Graduate student fellowship (USD \$10,000/year)

Other Experience

- 2018.06 Cellular, Computational and Cognitive Neuroscience Summer School
(Hosted by Princeton Neuroscience Institute, full expenses were provided)
- 2016.08 Brain-Mind-Machine Summer School in Marine Biology Laboratory
(Hosted by Center for Brain-Mind-Machine in MIT and Harvard, full expenses were provided)

Reference

- Dr. Mehrdad Jazayeri
- Massachusetts Institution of Technology, postdoc advisor
- Dr. Benjamin Hayden
- University of Minnesota, PhD advisor
- Dr. John Pearson
- Duke University, collaborator
- Dr. Steven Piantadosi
- University of California at Berkeley, collaborator