認知脳科学セミナー

2018 年 2 月 23 日 (Fri)　14:00-15:00

北海道大学 古河講堂 1 階 109 教室

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Research on learning & memory with neuromodulation in Computational Learning & Memory Neuroscience (CLMN) Lab in Korea

In this seminar, I present a multimodal approach for research in learning & memory, combining behavioral experiments, computational models, neuroimaging, and neuromodulation. In the first part of my talk, I introduce a unifying mechanism accounting for the spacing and the contextual interference effects and then search neural substrates related to motor memories predicted by the computational model. I present the substrates of motor memories from the fronto-parietal to the anterior cerebellar area with gradually increasing time scales of their activities. In the second part of my talk, I present a recent study showing how episodic memory, which is different from motor memory, can be modulated by non-invasive brain stimulation (TMS). I reported multiple day rTMS can be used to enhance fMRI activity of hippocampal-cortical memory network during associative memory formation. Additionally, I also present another study investigating on behavioral and neural signatures of bidirectional interference between motor memory and episodic memory. Lastly, I discuss ongoing studies and future research plans in my lab, computational learning & memory neuroscience (CLMN) lab in Korea.

References

- Kim S, Callier T, Bensmaia SJ* (2017). A computational model that predicts behavioral sensitivity to intracortical microstimulation. *Journal of Neural Engineering*, Vol. 14, Issue 1
- Kim S§, Ogawa K§, Lv J, Schweighofer N*, Imamizu H (2015). Neural substrates related to motor memory with multiple time scales in sensorimotor adaptation. *PLoS Biology*, Vol. 13, Issue 12, 2015 (§co-first author)
- Kim S, Callier T, Tabot GA, Gaunt RA, Tenore FV, Bensmaia SJ* (2015). Behavioral assessment of sensitivity to intracortical microstimulation of primate somatosensory cortex. *Proceedings of National Academy of Sciences U. S. A.*, Vol. 112, Issue 49, 2015

Sungshin Kim graduated from Seoul National University with double majors in electrical engineering and chemical engineering. In 2013, he completed PhD degree in neuroscience at the University of Southern California, Los Angeles, USA. Since 2014, he has worked as a postdoctoral scholar at the University of Chicago and Northwestern University. Recently, he was selected as one of seven recipients of YSF (Young Scientists Fellowship) funded by Institute of Basic Sciences (IBS) in Korea. He will start his own lab September, 2017.

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