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# Personal Data

Sep. 1994 ~ Korean (South)

Present

# Education

Mar. 2016 ~ **KAIST** Daejeon, Korea

Present MS-PhD Student (Advisor: Prof. Sang Wan Lee)

*Department of Bio and Brain engineering, Program of Brain and Cognitive engineering,*

*College of Engineering*

Mar. 2012 ~ **Korea University** Seoul, Korea

Feb. 2016 First major – Bachelor of Science in Life Sciences

*Division of Life sciences, College of Life Sciences and Biotechnology*

Second major – Bachelor of Science in Brain and Cognitive Sciences (Interdisciplinary program)

*Department of Brain and Cognitive Sciences, College of Information & Communication*

# Publications

1. **D. Kim**, G. Y. Park, J. P. O′Doherty, and S. W. Lee, “Task complexity interacts with state-space uncertainty in the arbitration between model-based and model-free learning,” Nat. Commun., vol. 10, no. 1, p. 5738, Dec. 2019.

# Peer-reviewed Conferences

1. (Poster) **D. Kim**, J. Park, J. Hwang, W. H. Choe, S. W. Lee\*, “Decoding prefrontal cognitive states from electroencephalography in virtual-reality environment” The 7th IEEE international winter conference on Brain-computer interface (IEEE BCI 2020), 2020.
2. (Poster) **D. Kim** and S. W. Lee\*, “Behavioral and neural evidence for intrinsic motivation effect on reinforcement learning”, in The Multi-disciplinary Conference on Reinforcement Learning and Decision Making (RLDM), 2019.
3. (Poster) **D. Kim** and S. W. Lee\*, “Deciphering model-based and model-free reinforcement learning strategies and choices from electroencephalography”, in The Multi-disciplinary Conference on Reinforcement Learning and Decision Making (RLDM), 2019.
4. (Poster) **D. Kim**, G. Y. Park, J. P. O'doherty and S. W. Lee, “Evidence of behavioral and neural interaction between task complexity and state-space uncertainty during reinforcement learning” Computational and Systems Neuroscience (COSYNE), Lisbon, 2019.
5. (Oral) **D. Kim** and S. W. Lee, “Decoding Both Intention and Learning Strategies from EEG Signals” The 6th IEEE international winter conference on Brain-computer interface (IEEE BCI 2019), 2019.
6. (Oral) **D. Kim** and S. W. Lee, “Model-based BCI : A novel brain-computer interface framework for reading out learning strategies underlying choices” IEEE International Conference on Systems, Man, and Cybernetics (IEEE SMC), 2018.
7. (Oral) **D. Kim**, G. Y. Park and S. W. Lee, “Hierarchical control architecture regulating competition between model-based and context-dependent model-free reinforcement learning strategies” IEEE International Conference on Systems, Man, and Cybernetics (IEEE SMC), 2018.
8. (Poster) **D. Kim** and S. W. Lee, “Reading out reinforcement learning strategies underlying trial-by-trial choice behavior” The Seventh International BCI Meeting: “BCIs: Not Getting Lost in Translation” (BCI meeting 2018), 2018.
9. (Poster) **D. Kim** and S. W. Lee, “Dynamic encoding of reward and latent task structures in human reinforcement learning” Computational and Systems Neuroscience (COSYNE), Denver, 2018.
10. (Poster) **D. Kim** and S. W. Lee, “Context-dependent meta-control for reinforcement learning using a Dirichlet process Gaussian mixture model” The 5th IEEE international winter conference on Brain-computer interface (IEEE BCI 2018), 2018.
11. (Poster) **D. Kim**, C. Weston and S. W. Lee, “EEG-based classification of learning strategies : model-based and model-free reinforcement learning” The 5th IEEE international winter conference on Brain-computer interface (IEEE BCI 2018), 2018.
12. (Poster) **D. Kim** and S. W. Lee, “Dirichlet process-based arbitration control of reinforcement learning” The 5th International Conference on Robot Intelligence Technology and Applications (ICRITA 2017), 2017.
13. (Poster) J.-E. Lim, **D. Kim** and S. W. Lee, “EEG synchrony patterns of autism spectrum disorder” Korea society of human brain mapping, 2017.
14. (Oral) G. Y. Park, **D. Kim** and S. W. Lee, “Meta reinforcement learning incorporating task complexity” Proceeding of KIIS Fall Conference, 2017.

# Patents

1. **D. Kim** and S. W. Lee\*, Method and apparatus for predicting ultra-high performance complex behavior based on brain signal based universal cognitive state decoder (Korean patent pending 10-2020-0005994)
2. **D. Kim** and S. W. Lee\*, Systems and method for predicting human choice behavior and underlying strategy using meta-reinforcement learning. (Korean patent pending 10-2019-0001557)
3. **D. Kim** and S. W. Lee\*, Method and apparatus of brain-computer interface design for estimating choice behavior and decision strategy. (Korean patent pending 10-2018-0103732)