



Overview

The boundary between brains and machines are more connected than ever. Biological intelligence inspires the design of artificial systems, while modern AI tools are reshaping how we observe, decode, and ultimately understand the brain. This symposium brings together neuroscientists, computational modelers, and AI researchers to explore this two-way exchange: from hippocampal memory circuits that enable rapid generalization in artificial agents, and cerebellar computations that point toward principles for adaptive motor control, to AI-driven connectomics and agent-orchestrated behavioral monitoring that are transforming experimental neuroscience itself. Across talks spanning memory, decision-making, motor control, and autonomous experimentation, we ask how letting each field reshape the other can drive the next generation of brain-inspired AI and AI-empowered neuroscience.

Speakers



"Cerebellar computations for flexible control of movements"

Sungho Hong Institute for Basic Science (IBS)

Sungho Hong is a Senior Research Fellow and Principal Investigator at the IBS Center for Memory and Glioscience, and an Adjunct Professor of Biomedical Engineering at UNIST. With a Ph.D. in theoretical physics from the University of Pennsylvania and over a decade leading computational neuroscience research as a Group Leader at OIST, he applies mathematical and modeling approaches to uncover how cell-type-specific single-neuron properties shape network-level computation — with particular emphasis on cerebellar circuits, multiplexed neural coding, and circadian systems. His work has been published in Nature Neuroscience, Nature Communications, PNAS, eLife, and NeurlPS.

"Agent-AI for autonomous monitoring of group-living mice"

Jee Hyun Choi Korea Institute of Science and Technology (KIST)

Jee Hyun Choi is a Principal Research Scientist at the Center for Neuroscience, Korea Institute of Science and Technology (KIST), and an Adjunct Professor in the Department of Physics at Seoul National University. Trained as a biophysicist, she pioneered high-density EEG technology for freely moving mice and integrates it with optogenetics and machine learning to decode neural oscillations underlying sleep, defensive behavior, and social interaction. She leads the CBRAIN initiative, a novel paradigm for studying collective intelligence in groups of socially interacting animals, and her work has been published in PNAS, Nature Communications, Science Advances, and Neuron.



"Neural computations underlying paradoxical belief reinforcement from a single conflict"

Minsu Abel Yang Korea Advanced Institute of Science and Technology (KAIST)

Abel Yang received Ph.D. at KAIST, where he investigates how neural circuits arbitrate between competing decision-making strategies during reward-seeking behavior. His research integrates computational modeling with experimental neuroscience to dissect the roles of the striatum and the external globus pallidus, including its astrocytic contributions, in flexible action selection, habit formation, and few-shot behavioral adaptation. His work has appeared in premier journals including Nature Communications and Science Advances, advancing our understanding of the neural substrates of adaptive behavior.

"Hippocampal Model of Generalization Using Episodic Memory"

Jaedong Hwang Massachusetts Institute of Technology (MIT)

Jaedong Hwang is a Ph.D. student in Electrical Engineering and Computer Science at MIT, jointly advised by Profs. Ila Fiete and Paul Liang. His research bridges data-centric machine learning and computational neuroscience, focusing on grid-cell-inspired memory architectures, neuro-inspired AI, hippocampal cognitive maps, and overcoming catastrophic forgetting in AI. His work has been published in leading venues including ICLR, ICML, and CVPR, and has earned recognitions such as a TMLR Featured Certification, the KFAAS Doctoral Study Fellowship, and the Distinguished Dissertation Award from Seoul National University.



Organizers

Jeon Kwon Max Planck Institute for Security and Privacy (MPI-SP)

Jeon Kwon is a Postdoctoral Researcher at the Max Planck Institute for Security and Privacy, where he investigates neuroscience-inspired approaches to enhance the explainability of AI systems. His research interests span the bidirectional relationship between Neuroscience for AI and AI for Neuroscience, focusing on memory systems, animal behavior analysis, and visual information processing in neural network architectures. His Neuro-AI work has been published in leading venues such as NeurlPS, ICML, and ICLR, earning accolades like the Excellent Paper Award from the Korean Artificial Intelligence Association.



Sunpil Kim Institute for Basic Science (IBS)

Sunpil Kim is a Postdoctoral Researcher at the Institute for Basic Science (IBS) Center for Memory and Glioscience working with Director C. Justin Lee. His research spans dopamine-induced astrocytic signaling, visuosocial memory in the CA2 hippocampus, and the development of unsupervised computational frameworks for animal behavior analysis. He is a co-developer of SUBTLE, a spectrogram-UMAP temporal link embedding platform for behavior mapping (technology-transferred to ACTNOVA), and his work has appeared in venues including the International Journal of Computer Vision, Experimental & Molecular Medicine, Redox Biology, and PNAS.

