

Title: Higher-Order Cognitive Processes: Integrating Mechanism, Representation, and Computation

September 7th (Monday), 08:30-10:25

Room 105-106, Daejeon Convention Center, Daejeon, Korea

Registration KSBNS2026.org

Organizer

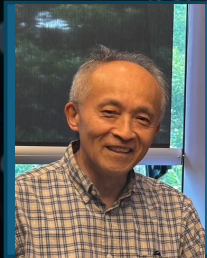


Sue-Hyun Lee

Department of Psychology, Seoul National University, Korea

This symposium will examine higher-order cognitive processes—including awareness, memory, imagery, and abstraction—across multiple levels, from synaptic mechanisms to network and whole-brain dynamics. By integrating findings from synaptic plasticity, internally generated mental content, high-level perception, and large brain models, it aims to discuss how these processes operate across levels and domains.

Speakers



Tomoki Fukai

Neural Coding and Brain Computing Unit, Okinawa Institute of Science and Technology (OIST), Japan
"Inhibitory Circuit Mechanisms of Memory Cell Assembly Reactivation"

Dr. Fukai has been exploring, using computational models, how neurons, neuronal wiring structure, and synaptic plasticity rules cooperatively learn cognitive functions. His work focuses on the crucial contributions of neural network dynamics to brain computing, particularly to episodic memory and decision making.

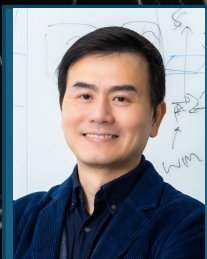


Tomoyasu Horikawa

NTT, Inc., Communication Science Laboratories, Japan

"Probing the Neural Basis of Subjective Experience via Decoding Internally Generated Mental Representations"

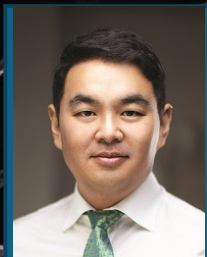
Dr. Horikawa is known for pioneering work in decoding dreams and reconstructing internally generated mental content from human brain activity. His research integrates brain decoding and deep learning to bridge neural representations with subjective experience.



Hakwan Lau

Center for Neuroscience Imaging Research (CNIR), Institute for Basic Science (IBS), Korea
"Prefrontal Mechanisms for Perception: Sensory, Cognitive, or Metacognitive?"

Dr. Lau is currently a director for an IBS Center (CNIR). He used to work at Oxford University, University College London, Columbia University, University of California Los Angeles (UCLA), The University of Hong Kong, and the Riken Center for Brain Science (Japan). He has long been interested in theories and models of perceptual metacognition.



Jiook Cha

Department of Psychology, Seoul National University, Korea
"Large Brain Model"

Dr. Cha develops AI that decodes the brain's language, viewing the brain as an active and emergent prediction system rather than a passive recorder. His research interests focus on creating AI scientists that can autonomously advance neuroscience research and help us understand both the order and disorder of the brain.