Contribution ID: **2** Type: **Keynote Lecture**

Integrating Brain Imaging and AI: Applications in Neurological Disorders

Monday 27 October 2025 09:15 (1 hour)

Advances in brain imaging and AI provide an unprecedented opportunity to explore the human mind and develop new approaches for treating neurological disorders. Each neurodegenerative disorder affects distinct large-scale brain networks. This talk will focus on brain network phenotypes in neurological disorders such as Alzheimer's and cerebrovascular disease. Specifically, how these network phenotypes relate to pathology, help identify at-risk groups, and predict cognitive decline. Our recent work on AI-driven models for brain decoding and interpretable brain foundation models with efficient adaptation strategies will also be discussed. Moving forward, integrating AI with brain imaging paves the way for improved early diagnosis and treatment strategies for neuropsychiatric disorders.

Dr. Juan Helen Zhou is an Associate Professor at the (Centre for Sleep and Cognition)[https://medicine.nus.edu.sg/csc/], and Director of the (Centre for Translational Magnetic Resonance Research)[https://medicine.nus.edu.sg/tmr/], Yong Loo Lin School of Medicine, National University of Singapore (NUS). She is also affiliated with the Department of Electrical and Computer Engineering at NUS.

Her research focuses on selective brain network-based vulnerability in aging and neuropsychiatric disorders, leveraging multimodal neuroimaging and machine learning approaches. Dr. Zhou received both her Bachelor's and Ph.D. in Computer Science from Nanyang Technological University, Singapore. She completed multiple postdoctoral fellowships at the Memory and Aging Center, Department of Neurology, University of California, San Francisco; the Computational Biology Program at the Singapore-MIT Alliance; and the Department of Child and Adolescent Psychiatry at New York University.

Dr. Zhou has served as a Council Member and Program Committee Member of the Organization for Human Brain Mapping (OHBM) and is a recognized OHBM Fellow. She serves on the Advisory Board of Cell Reports Medicine, and has held editorial roles with eLife, Human Brain Mapping, and Communications Biology. Her research has been supported by various funding bodies in Singapore, the Royal Society (UK), and the NIH (USA).

Dr. Juan Helen Zhou will deliver the BigBrain Project Educational Lecture at the HBHL Training Day.

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Session Classification: Helen Zhou