

SCIENTIFIC PROGRAM

SESSION LECTURE

No.22

Neuroscience and Brain Inspired Intelligence
Room: Dong Yu Grand Ballroom 1

Co-Chairs:
Xu Zhang



Luping Shi



Xiaoqin Wang



Day 1 October 19th (Saturday) 14:00 – 17:30

Time	Speaker	Title
14:00-14:30	Xiaoqin Wang Johns Hopkins University, USA	Music, brain and human intelligence
14:30-15:00	Luping Shi Tsinghua University, China	Brain inspired computing, perception and intelligence
15:00-15:30	Giacomo Indiveri, Chiara De Luca University of Zurich and ETH Zurich, Switzerland	Brain inspired computational primitives enable analog electronic circuits to exhibit robust and reliable neuromorphic intelligence
15:30-16:00	Tea Break	
16:00-16:30	Guangbin Huang Nanyang Technological University, Singapore	Converge of AI and brain science
16:30-17:00	Si Wu Peking University, China	Neural information processing with attractor networks
17:00-17:30	Lirong Zheng Guangdong Institute of Intelligence Science and Technology, China	Large scale brain computing based on neocortex models



Xu Zhang

xu.zhang@gdiist.cn

Professor Xu Zhang, Neuroscientist, Academician of Chinese Academy of Sciences, TWAS (The World Academy of Sciences for the advancement of science in developing countries) Fellow, and Member of Chinese Academy of Medical Sciences. He received his Ph.D. of Neuroscience from Karolinska Institute, Sweden in July, 1994. In 1994, he successively worked as a lecturer, associate professor and professor, and deputy director at the Neuroscience Institute of Fourth Military Medical University. In 1999, he became a professor and principal investigator in Lab of Sensory System at Institute of Neuroscience, Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences. In 2021, he was appointed as a professor of Shanghai Institute for Advanced Study, Chinese Academy of Sciences, Director of Shanghai Brain-Intelligence Engineering Center, and President of Guangdong Institute of Intelligence Science and Technology, respectively. He is also the President of the Chinese Neuroscience Society, the Vice President of the Chinese Society of Cell Biology, and the Vice President of the Pain Branch of the Chinese Medical Association.



Xiaoqin Wang

xiaoqin.wang@jhu.edu

Professor Xiaoqin Wang is the Director of the Laboratory of Auditory Neurophysiology at Johns Hopkins University. He was the Director of the Tsinghua-Johns Hopkins Joint Center for Biomedical Engineering Research. He received his BS in electrical engineering at Sichuan University in China and his MS in electrical engineering and computer science at the University of Michigan in Ann Arbor, Michigan. He completed his Ph.D. in biomedical engineering at Johns Hopkins University and subsequently conducted a postdoctoral fellowship in neurophysiology at the University of California, San Francisco. His research aims to understand brain mechanisms responsible for auditory perception and vocal communication in a naturalistic environment. He has won several awards and NIH grants for his research. He was awarded the Presidential Early Career Awards for Scientists and Engineers. He has served on the editorial review boards for more than 20 academic journals in the field, has authored or co-authored several dozen peer-reviewed publications and has presented his work nationally and internationally.



Luping Shi

lpshi@tsinghua.edu.cn

Professor Luping Shi received his Doctor of Science from the University of Cologne, Germany in 1992. He is currently the Director of Optical Memory National Engineering Research Center, the founding Director of Brain-inspired Computing Research Center (CBICR) at Tsinghua University, and a principal investigator of IDG/McGovern Institute for Brain Research at Tsinghua University. His research interests include brain-inspired computing and perception, information storage, and intelligent systems. CBICR is China's pioneering institute dedicated to comprehensive research on brain-inspired computing and perception, covering areas from basic theory to chips, software, systems, and applications. Prof. Shi has led the development of two significant technologies: the first hybrid brain-inspired computing chip "Tianjic" and the first primitive-based brain-inspired complementary vision chip "Tianmouc", both featured as cover articles in Nature in 2019 and 2024, respectively.



Giacomo Indiveri

giacomo@ini.uzh.ch

Professor Giacomo Indiveri is a leading researcher in the field of neuromorphic engineering, bridging the gap between natural and artificial intelligence. As the Director of the Institute of Neuroinformatics at the University of Zurich (UZH) and ETH Zurich, and a dual Professor of Neuromorphic Cognitive Systems at both institutions, he leverages his expertise in electrical engineering, computer science, neuroscience, and machine learning to delve into the intricate workings of the brain. Dr. Indiveri's research focuses on building low-power mixed-signal circuits that mimic the dynamics of biological neurons and synapses. He explores how these biomimetic circuits can perform efficient neural computation, shedding light on the fundamental principles governing spike-based information processing in the brain.



Guangbin Huang

gbhuang@ieee.org

Professor Guangbin Huang is a Full Professor (with tenure) in the School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore. He received the B.Sc degree in applied mathematics and M.Eng degree in computer engineering from Northeastern University, P. R. China, in 1991 and 1994, respectively, and Ph.D degree in electrical engineering from Nanyang Technological University, Singapore in 1999. During undergraduate period, he also concurrently studied in Wireless Communication department of Northeastern University, P. R. China. He was a Nominee of 2016 Singapore President Science Award, was awarded Thomson Reuters's 2014 "Highly Cited Researcher" (Engineering), Thomson Reuters's 2015 "Highly Cited Researcher" (in two fields: Engineering and Computer Science), and listed in Thomson Reuters's "2014 The World's Most Influential Scientific Minds" and "2015 The World's Most Influential Scientific Minds." He received the best paper award from IEEE Transactions on Neural Networks and Learning Systems (2013).



Si Wu

siwu@pku.edu.cn

Professor Si Wu is currently a tenured professor and dean of the School of Psychology & Cognitive Sciences, PI in McGovern Institute for Brain Research, and PI in PKU-Tsinghua Center for Life Sciences, Peking University, CHINA. He was originally trained as a physicist and received his Bsc in Physics (90), Msc in General Relativity (92), and PhD in Statistics Physics (95), all from Beijing Normal University. After graduation, his research interest turned to AI and Brain Science. He worked as Postdoc in Hong Kong University of Science & Technology (95-97), Limburg University of Belgium (97-98), and RIKEN Brain Science Institute of Japan (98-00), as Lecturer/Senior Lecturer in Sheffield University (00-02) and Sussex University (03-08) in UK, as PI in Institute of Neuroscience of Chinese Academy of Sciences (08-11), and as Professor in Beijing Normal University (11-18). His research areas are Computational Neuroscience and Brain-inspired Computing. He is particularly interested in elucidating the general principles of neural information processing, and based on which to develop brain-inspired computing algorithms. He has published more than 100 papers, including top journals in neuroscience and top conferences in AI. He is serving as Co-editor-in-chief for *Frontiers in Computational Neuroscience*



Lirong Zheng

zhenglirong@gdiist.cn

Professor Lirong Zheng, a National Specially Enlisted Expert, Overseas High-Level Talent, and Member of the Academic Degree Committee of the State Council of China. He is the vice President of Guangdong Institute of Intelligence Science and Technology. He received a Ph.D. degree from Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences in 1996, and a Ph.D. degree in electronic system design from the Royal Institute of Technology (KTH), Stockholm, Sweden in 2001. Afterwards he worked at KTH as a research fellow, associate professor, full professor, and the founding director of iPack VINN Excellence Center of Sweden. He served as the dean of School of Information Science and Technology at Fudan University from 2010 to 2020. He has authored and co-authored more than 400 international reviewed publications and 2 books, and holds over 10 patents and multiple industrialization achievements.