

Mathematical Foundations & Methodologies for Artificial Intelligence and Data-Driven Scientific Computing

Workshop on Mathematical Foundations of AI Models

(17 Aug 2026–21 Aug 2026)



ORGANIZING COMMITTEE

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Venue

IMS Executive Seminar Room
Block S17, Level 3
10 Lower Kent Ridge Rd Singapore 119076

For more information: <https://ims.nus.edu.sg/events/mathfoundationsai>

Workshop on Mathematical Foundations of AI Models

(17 Aug 2026–21 Aug 2026)

Monday, 17 August 2026

Time	Title	Speaker
0830–0855	Registration	
0855–0900	Opening Remarks	Program Organizers
0900–0955		Yi Ma <i>The University of Hong Kong, Hong Kong SAR</i>
0955–1015	Tea Break	
1015–1110	Approximating PDEs with Neural Networks via Residual Minimization of Monotone Discretizations	Carlos Esteve-Yagüe University of Alicante, Spain
1110–1115	Short Break	
1115–1210		TBA
1210–1400	Lunch Break	
1400–1455	The Geometry of Training Dynamics	Govind Menon <i>Brown University, USA</i>
1455–1515	Tea Break	
1515–1610	How Mathematics Shapes AI for Science	Youngjoon Hong <i>Seoul National University, S. Korea</i>
1610–1615	Short Break	
1615–1710	Functional Scaling Laws for LLM Pretraining	Lei Wu <i>Peking University, China</i>

Tuesday, 18 August 2026

Time	Title	Speaker
0845–0900	Registration	
0900–0955	Test-Time Guidance for Flow-Based Generative Models via Enhanced Sampling	Bao Wang <i>University of Utah, USA</i>
0955–1015	Group Photo & Tea Break	
1015–1110	Training Task Diversity Shapes In-Context Learning via Low-Dimensional Subspaces	Qing Qu <i>University of Michigan, USA</i>
1110–1115	Short Break	

Tuesday, 18 August 2026		
Time	Title	Speaker
1115–1210	Anatomy of a Hallucination: How Diffusion Solvers Shape Generation Errors	Grigorios Chrysos <i>University of Wisconsin, USA</i>
1210–1400	Lunch Break & Poster Session	
1400–1455		Rene Vidal <i>University of Pennsylvania, USA</i>
1455–1515	Tea Break	
1515–1610	<i>Tutorial</i> Principles and Practice of Deep Representation Learning (Part 1)	Yi Ma <i>The University of Hong Kong, Hong Kong SAR</i>
1610–1615	Short Break	
1615–1710	<i>Tutorial</i> Principles and Practice of Deep Representation Learning (Part 2)	Peng Wang <i>University of Macau, Macau SAR</i>
1740	<u>Workshop Dinner (by invitation only)</u> 1-way transfer will be provided to dinner venue.	

Wednesday, 19 August 2026		
Time	Title	Speaker
0845–0900	Registration	
0900–0955	Accelerating LLM Pre-Training through Flat-Direction Dynamics Enhancement	Kun Yuan <i>Peking University, China</i>
0955–1015	Tea Break	
1015–1110	Training Neural Networks at Any Scale	Volkan Cevher <i>EPFL, Switzerland</i>
1110–1115	Short Break	
1115–1210	Deep Learning based Surface Reconstruction from PointClouds	Myungjoo Kang <i>Seoul National University, S. Korea</i>
1210–1400	Lunch Break	
1400–1455	Dynamics of Flow Matching under Manifold Hypothesis: Proximal Viewpoint	Kenji Fukumizu <i>The Institute of Statistical Mathematics, Japan</i>
1455–1515	Tea Break	
1515–1610	Finding Latent Structure at Very Low SNR: Heterogeneity Analysis in Cryo-EM	Marc Aurèle Gilles <i>Princeton University, USA</i>
1610–1615	Short Break	

Wednesday, 19 August 2026		
Time	Title	Speaker
1615–1710		TBA
Thursday, 20 August 2026		
Time	Title	Speaker
0845–0900	Registration	
0900–0955	How Does Learning Progress in Neural Network Training? River-Valley Landscapes and Optimizer Dynamics	Chulhee Yun <i>KAIST, S. Korea</i>
0955–1015	Tea Break	
1015–1110		Jinchao Xu <i>KAUST, Saudi Arabia</i>
1110–1115	Short Break	
1115–1210	Human-like Common Sense as Core Inductive Bias for General Intelligence	Roland Memisevic <i>University of Toronto, Canada</i>
1210–1400	Lunch Break	
1400–1455	Beyond Learning: Toward a Mathematical Theory of Computation for Artificial Intelligence	Gitta Kutyniok <i>Ludwig Maximilian University of Munich, Germany</i>
1455–1515	Tea Break	
1515–1610		TBA
1610–1615	Short Break	
1615–1710		TBA
Friday, 21 August 2026		
Time	Title	Speaker
0845–0900	Registration	
0900–0955	Multigrade Neural Network Approximation: Residual Refinement and Layer-wise Rates	Shijun Zhang <i>Hong Kong Polytechnic University, Hong Kong SAR</i>
0955–1015	Tea Break	
1015–1110		Quang Khoat Than <i>HUST, Vietnam</i>
1110–1115	Short Break	
1115–1210	Inference-Time Learning Through Context	Zhihui Zhu <i>Ohio State University, USA</i>

This schedule is accurate as of 30 Jul 2026 and is subjected to changes.