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

Workshop on Mathematical Approaches to Modern AI Challenges

(31 Aug 2026–4 Sep 2026)

ORGANIZING COMMITTEE

Tan Minh Nguyen
National University of Singapore

Yang Liu
National University of Singapore

Richard Baraniuk
Rice University

Dong Bin
Peking University

Vincent Tan
National University of Singapore

Ji Hui
National University of Singapore

Li Qianxiao
National University of Singapore

Ren Weiqing
National University of Singapore

Venue

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

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

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Monday, 31 August 2026		
Time	**Title**	**Speaker**
0830–0855	Registration	
0855–0900	Opening Remarks	Program Organizers
0900–0955	Challenges and Opportunities of Self-Consuming Loops in AI	Richard Baraniuk *Rice University, USA*
0955–1015	Tea Break	
1015–1110	Sobolev IPM with Graph Metric: Regularization, Scalability, and Applications	Tam Le *The Institute of Statistical Mathematics, Japan*
1115–1210	Agentic Reinforcement Learning	Bo An *NTU, Singapore*
1210–1400	Lunch Break	
1400–1455	Symmetry in Deep Learning	Robin Walters *Northeastern University, USA*
1455–1515	Tea Break	
1515–1610	Nipping the Butterfly Effect in the Bud: Self-Output Fine-Tuning for Autoregressive Weather Prediction	Hsuan-Tien Lin *National Taiwan University, Taipei*
1615–1710	Emulating and Calibrating Antarctic Ice-Sheet Dynamics with Diffusion Models and Deep Feature Matching	Won Chang *Seoul National University, S. Korea*

Tuesday, 1 September 2026		
Time	**Title**	**Speaker**
0845–0900	Registration	
0900–0955	Learning Rates, Restart and Adaptive Acceleration	Alexandre d'Aspermont *Ecole Normale Supérieure, France*
0955–1015	Group Photo & Tea Break	
1015–1110	AI meets Fourier: Towards Interpretability in Large Language Models	Kannan Ramchandran *UC Berkeley, USA*
1115–1210	Tutorial Talk	Tan Minh Nguyen *NUS, Singapore*

Tuesday, 1 September 2026		
Time	**Title**	**Speaker**
1210–1300	*Lunch Reception at IMS*	
1300–1400	Poster Session	
1400–1455	Learning Structured Relevance Networks	Alfred Hero *University of Michigan, USA*
1455–1515	Tea Break	
1515–1610	Tutorial Talk	Viet Hoang Tran *NUS, Singapore*
1615–1710	Tutorial Talk *(Delivered virtually)*	Vo Ngoc Thieu *University of Bath, UK*
1740	*Workshop Dinner (by invitation only)* 1-way transfer from NUS to dinner venue is provided.	

Wednesday, 2 September 2026		
Time	**Title**	**Speaker**
0845–0900	Registration	
0900–0955	Missing Data Imputation using Neural Cellular Automata	Thanh Bình Nguyễn *University of Science - VNUHCM, Vietnam*
0955–1015	Tea Break	
1015–1110	Learning, Approximation and Control	Qianxiao Li *NUS, Singapore*
1115–1210	Mixture of Experts Inside the Euler Equation	Tien Trinh Nguyen *Shanghai Jiao Tong University, China*
1210–1400	Lunch Break	
1400–1455	Instances where Compositional Structure Helps Avoid the Curse of Dimensionality	Mauro Maggioni *Johns Hopkins University, USA*
1455–1515	Tea Break	
1515–1610	Non-Hackable Confidence Reward Functions	Wee Sun Lee *NUS, Singapore*
1615–1710	How Many Different Outputs Can a Transformer Generate	Maxime Meyer *NUS, Singapore*

Thursday, 3 September 2026		
Time	**Title**	**Speaker**
0845–0900	Registration	
0900–0955	Discriminants for Neural Network Verification	Guido Montufar *UC Los Angeles, USA*
0955–1015	Tea Break	
1015–1110	Real-time Digital Twins: Challenges and Opportunities for Scientific Machine Learning	Tan Bui-Thanh *UT Austin, USA*
1115–1210	The Effects of Feature-Space Dimensionality on Activation Steering	Laziz Abdullaev *NUS, Singapore*
1210–1400	Lunch Break	
1400–1455	Slowly Annealed Langevin Dynamics: Theory and Applications to Training-Free Guided Generation	Atsushi Nitanda *NTU, Singapore*
1455–1515	Tea Break	
1515–1610	On Preventing Model Collapse in Generative Models	Bahman Gharesifard *Queen's University, Canada*
1615–1710	Beyond Independence: Strongly Correlated Particle Systems in Sampling for ML	Tran Hoang Son *NUS, Singapore*

Friday, 4 September 2026		
Time	**Title**	**Speaker**
0845–0900	Registration	
0900–0955	Impact of Data and Model Geometry on Learning Complexity in Deep Learning *(Delivered virtually)*	Melanie Weber *Harvard University, USA*
0955–1015	Tea break	
1015–1110	Narrative Models for Interpretable Use of LLMs	Larry Carin *A*STAR, Singapore*
1115–1210	Numerical Approximation for McKean-Vlasov SDE with Super-linear Growth Coefficients	Hoang Long Ngo *HNUE,Vietnam*

This schedule is accurate as of 02 Sep 2026 and is subjected to changes.