

## Machine Learning and Its Applications (10 Oct 2022–28 Oct 2022)

[Click here](#) for the playlist for tutorials.

[Click here](#) for the playlist to scientific sessions.

Speaker and Affiliation	Talk Title
Jeffrey Adie NVIDIA, Singapore	Applied machine learning for climate and weather modelling
Francis Bach INRIA/ENS, France	Information theory through kernel methods
Prasanna Balaprakash Argonne National Laboratory, USA	Scalable automated machine learning with DeepHyper
Mikhail Belkin University of California, San Diego, USA	Neural networks, wide and deep, singular kernels and Bayes optimality
Andrea Bertolini Sant'Anna School of Advanced Studies – Pisa, Italy	Bringing innovation to the market. Regulatory approaches to AI and the case of Europe
Steven Brunton University of Washington, USA	Machine learning for scientific discovery, with examples in fluid mechanics
Erik Cambria Nanyang Technological University, Singapore	Neurosymbolic AI for Sentiment Analysis
Li Cheng National University of Singapore, Singapore	Bayesian Fixed-domain Asymptotics for Covariance Parameters in Gaussian Process Regression
Michael Choi National University of Singapore, Singapore	Landscape modification meets spin systems: from torpid to rapid mixing and tunneling in the low-temperature regime
Anca Dragan University of California, Berkeley, USA	Challenges in learning for and from interaction with people
Jesper Dramsch ECMWF, Germany	Integrating machine learning into operational weather forecasts at the ECMWF
Weinan E Peking University, China	Towards a mathematical theory of machine learning

Speaker and Affiliation	Talk Title
Jianqing Fan Princeton University, USA	The Efficacy of Pessimism in Asynchronous Q-Learning
Yang Feng New York University, USA	Transfer learning under high-dimensional generalized linear models
Cornelia Fermüller University of Maryland, USA	Bio-inspired visual motion analysis
Sebastian Goldt SISSA, Italy	What do neural networks learn? On the interplay between data structure and representation learning
Suriya Gunasekar Microsoft Research, USA	Data Augmentation as Feature Manipulation
Jiequn Han Flatiron Institute, USA	<u>Tutorial</u> Deep learning for PDEs
Boris Hanin Princeton University, USA	Exactly Solving Bayesian Interpolation with Deep Linear Networks
Hamed Hassani University of Pennsylvania, USA	The Curse of Overparametrization in (adversarial) Robustness
Hui Ji National University of Singapore, Singapore	Self-supervised Deep Learning for Inverse Problems in Imaging
Nan Jiang University of Illinois Urbana-Champaign, USA	<u>Tutorial</u> Offline RL theory
Nikita Kazeev National University of Singapore, Singapore	Fast and accurate 2D material property learning by graph neural networks using sparse defect representation
Mohammad Emtiyaz Khan RIKEN, Japan	The Bayesian learning rule for adaptive AI  <u>Tutorial</u> Deep Learning from Bayesian Principles
Pang Wei Koh Stanford University, USA	Benchmarks and methods for real-world distribution shifts
Gitta Kutyniok Ludwig-Maximilians-Universität München, Germany	Reliable AI: Vision or Illusion?
Qianxiao Li National University of Singapore, Singapore	Approximation Theory of Deep Learning from the Dynamical Systems Viewpoint

Speaker and Affiliation	Talk Title
Min Lin SEA, Singapore	A Deep Learning Approach to Kohn-Sham Density Functional Theory
Lydia Liu University of California, Berkeley, USA	Lost in translation: reimagining the machine learning life cycle in education
Seth Neel Harvard Business School, USA	Adaptive Machine Unlearning
Juan-Pablo Ortega Nanyang Technological University, Singapore	Transport in Reservoir Computing
Guillaume Sartoretti National University of Singapore, Singapore	Distributed Learning Based Scalable Collaboration in Robotic Multi-Agent Systems
Nihar Shah Carnegie Mellon University, USA	<u>Tutorial</u> AI-augmented human evaluations
Ohad Shamir Weizmann Institute of Science, Israel	Implicit bias in machine learning
Harold Soh National University of Singapore, Singapore	Machine Learning for Human-Robot Interaction
Jascha Sohl-Dickstein Google, USA	Understanding infinite width neural networks
Linda Tan National University of Singapore, Singapore	Analytic natural gradient updates for Cholesky factor in Gaussian variational approximation
Vincent Tan National University of Singapore, Singapore	Minimax Optimal Fixed-Budget Best Arm Identification in Linear Bandits
Yan Shuo Tan National University of Singapore, Singapore	Understanding and overcoming the statistical limitations of decision trees
Andrey Ustyuzhanin National University of Singapore, Singapore	Black-Box Optimization with Local Generative Surrogates
Rene Vidal Johns Hopkins University, USA	Explainable AI via Semantic Information Pursuit
Yu-Ping Wang Tulane University, USA	Interpretable multimodal deep learning with application to biomedical data fusion

Speaker and Affiliation	Talk Title
Greg Yang Microsoft Research, USA	Feature Learning Infinite-Width Neural Networks Outperform Finite Ones  <u>Tutorial</u> The unreasonable effectiveness of mathematics in large scale deep learning
Haizhao Yang University of Maryland, USA	Finite expression method for solving high-dimensional PDEs
Angela Yao National University of Singapore, Singapore	Is Classification All You Need for Computer Vision?
Pan Zhou SEA, Singapore	Adan: Adaptive Nesterov Momentum Algorithm for Faster Optimizing Deep Models
Tianyi Joey Zhou A*STAR, Singapore	Trusted Multi-view Classification
Enrique Zuazua Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany	Control and machine learning