CMAI: Artificial Intelligence Colloquium Series
The Chinese University of Hong Kong

This CMAI AI Colloquium Series is organized by Centre for Mathematical Artificial Intelligence (CMAI), under Department of Mathematics at CUHK.

Date: Feb 7, 2024 (Wednesday)
Time: 3:30 pm-5:00 pm (Hong Kong Time)
Zoom Meeting: 925 5919 4513

An introduction to optimization on smooth manifolds and its applications

Speaker: Andi Han
Riken AIP

Abstract: Optimization over smooth manifolds is a class of nonlinear optimization problem where the variables concerned are constrained to a smooth manifold, i.e., an open set without boundaries that locally looks like a flat (i.e., Euclidean) space. This covers many familiar constraints presenting in the mathematical optimization literature, such as orthogonality, subspaces, fixed-rank matrices, positive definiteness and tensors and many more. In contrast to the Lagrangian approach for solving constrained optimization problems, Riemannian optimization provides an alternative geometric viewpoint leveraging the geometry of search space. This talk introduces the framework of Riemannian optimization along with its various applications in statistics and machine learning.

Bio: Andi Han received his doctoral degree in Business Analytics with University of Sydney in 2023, working on optimization theory on manifolds, Riemannian geometry and graph neural networks. He is currently a postdoctoral researcher with Riken AIP, Continuous Optimization Team. His current research interest involves optimization on manifolds, optimization theory for deep learning and large language models, dynamical systems theory for graph neural networks.