THE UNIVERSITY  OF HONG KONG

Department of Mathematics

Departmental Seminar

High-Dimensional Inverse Problems with Generative Models

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Abstract

Extensive research over the last 1-2 decades has led to a variety of powerful techniques for high-dimensional inverse problems, with the prevailing approach being to introduce low-dimensional modeling assumptions such as sparsity and low-rankness. Recently, there has been a paradigm shift toward data-driven techniques, including the replacement of explicit modeling assumptions with implicit generative models based on deep neural networks. In comparison to traditional approaches, this line of work remains in its infancy, and we have explored this exciting new research avenue from both theoretical and practical perspectives.

In the talk, I will present three key aspects of my work on high-dimensional inverse problems with generative models. Firstly, I will discuss our information-theoretic lower bounds and corresponding proof techniques for linear compressed sensing with generative models. Secondly, I will provide a brief overview of our theoretical findings on nonlinear compressed sensing with generative models. Lastly, I will introduce our work on exploring the use of generative models for PCA, which offers a generative alternative to the commonly used sparse PCA problem.

Date:	April 26, 2023 (Wednesday)
Time:	5:00 – 6:00pm
Venue:	Room 309, Run Run Shaw Bldg., HKU

All are welcome