**THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY**

Department of Mathematics

**SEMINAR ON STATISTICS**

**Effective Algorithms for Differentially Private Synthetic Data Generation**

By

**Prof. Yizhe ZHU**

University of California, Irvine

**Abstract**

Differentially private synthetic data provide a powerful mechanism to enable data analysis while protecting sensitive information about individuals. We first present a highly effective algorithmic approach for generating differentially private synthetic data in a bounded metric space with near-optimal utility guarantees under the Wasserstein distance. When the data lie in a high-dimensional space, the accuracy of the synthetic data suffers from the curse of dimensionality. We then propose an algorithm to generate low-dimensional private synthetic data efficiently from a high-dimensional dataset. A key step in our algorithm is a private principal component analysis (PCA) procedure with a near-optimal accuracy bound. Based on joint work with Yiyun He (UC Irvine), Roman Vershynin (UC Irvine), and Thomas Strohmer (UC Davis).

**Date** : 9 August 2023 (Wednesday)

**Time** : 10:00am

**Venue** : Room 4504 (Lifts 25/26)

*All are Welcome!*