



統計科學研究所

INSTITUTE OF
STATISTICAL SCIENCE



SEMINAR



STATAS

Seminar

Title : Bayesian Shrinkage Estimation for Persistent Homology

Speaker : Prof. Chun-Hao Yang (楊鈞浩教授)

(Institute of Statistics and Data Science, National Taiwan University)

Time : 10:30 ~ 12:00, Monday, October 30, 2023

Place : Auditorium, B1F, Institute of Statistical Science

Abstract

Topological data analysis (TDA) refers to statistical methods that study the topological structure of data. Persistent homology is one of TDA's most commonly known tools. Persistent homology describes the persistence of topological features using the homology theory. In this talk, I will briefly introduce the persistent diagram, which is a graphical representation of the persistent homology, and how to use the persistent diagram to infer the topology of the data. Another important topological summary is the Betti number, which can be estimated from the persistent diagram. For example, the 0th Betti number is the number of connected components and the 1st Betti number is the number of 1-dim holes in the sample space. One of the important statistical questions is to estimate the Betti numbers. I will present a novel Bayesian model to obtain shrinkage estimates for the persistent diagrams and the Betti numbers.

※ Tea reception starts at 10 : 10.

※ Lecture in Mandarin. Online live streaming through Cisco Webex will be available.