INDIAN STATISTICAL INSTITUTE

Theoretical Statistics and Mathematics Unit, Kolkata

SEMINAR

Date: November 24, 2023
Time: 02:30 PM

VENUE:

L-infinity

(5th Floor, A.N. Kolmogorov Bhavan), ISI Kolkata

TITLE:

Geometric Exploratory Data Analysis for Random Objects

SPEAKER:

Paromita Dubey

University of Southern California

ABSTRACT:

In this talk I will propose new tools for the exploratory data analysis of data objects taking values in a general separable metric space. Using distance profiles, where the distance profile of a point ω in the metric space refers to the distribution of the distances between ω and the data objects, I will describe how to obtain transport ranks, which capture the centrality of each element in the metric space with respect to the data cloud. I will discuss the properties of transport ranks and show how they can be an effective device for detecting and visualizing patterns in samples of random objects. Together with practical illustrations I will establish the large sample properties of the estimators of the distance profiles and the transport ranks which will be valid for a wide class of metric spaces. Finally, I will describe a new powerful two sample test geared towards populations of random objects by utilizing the distance profiles corresponding to the data objects. I will demonstrate the efficacy of this new approach on distributional data comprising of a sample of age-at-death distributions for various countries, for compositional data through energy usage for the U.S. states and for neuroimaging network data.

ALL ARE CORDIALLY INVITED