

Title: Testing of Index-Invariant Properties in the Huge Object Model

Date, Time: Tuesday 8 August 2023, 10:30 AM

Venue: KD 101 , Department of CSE

Abstract:

Understanding whether data generated from some experiment satisfies some property is a fundamental problem in Machine learning and Statistics. Often the data give rise to probability distributions and the goal is to understand some properties of these distributions by looking at only a few samples from them. However, for learning properties of high dimensional distributions, which is widespread in practice, even reading a few samples completely is infeasible. To address this, Goldreich and Ron (ITCS 22) formalized the Huge Object Model, where the algorithm can query only a few bits from the samples. This model naturally relates to financial and medical data. In this talk, we study this model and propose some efficient algorithms to learn distributions and test various properties of distributions in this model.

This talk will be based on the following papers: 1) Testing of Index-Invariant Properties in the Huge Object Model (<https://proceedings.mlr.press/v195/chakraborty23a.html>, appeared in COLT 23 & featured in Oded Goldreich's choices: <https://www.wisdom.weizmann.ac.il/~oded/MC/335.html>), 2) Testing of Horn Samplers (<https://proceedings.mlr.press/v206/banerjee23a.html>, appeared in AISTATS 23) and 3) Exploring the Gap between Tolerant and Non-tolerant Distribution Testing (https://drops.dagstuhl.de/opus/frontdoor.php?source_opus=17149, appeared in RANDOM 22 & HALG 23), and are joint works with Sourav Chakraborty, Eldar Fischer, Arijit Ghosh, Kuldeep S. Meel, Ansuman Banerjee, Gopinath Mishra, Uddalok Sarkar and Shayak Chakraborty.

Brief Bio:

Sayantans Sen is currently a Postdoctoral Fellow at the School of Computing, National University of Singapore, advised by Prof. Arnab Bhattacharyya. He has submitted his PhD thesis at Indian Statistical Institute, Kolkata where he was advised by Prof. Sourav Chakraborty. Prior to this, he did his Master's and Bachelor's studies at Chennai Mathematical Institute and Jadavpur University respectively. His main field of research is in theoretical computer science, with a focus on distribution testing.

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