



Theoretical Statistics and Mathematics Unit, Kolkata
INDIAN STATISTICAL INSTITUTE

SEMINAR

Date: July 25, 2025
Time: 04:15 PM

VENUE:

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

TITLE:

**Elephants Help Ants:
Learning Preferences from the Past**

SPEAKER:

Tamojit Sadhukhan
Stat-Math Unit, ISI Kolkata

ABSTRACT:

In many real-world settings - from online recommendation systems to consumer choice modelling - individuals make repeated selections from a fixed set of options. Accurately estimating their underlying preferences is essential for offering personalized future options. In this talk, we introduce a novel framework for predicting user preference based on their past choices, under a natural monotonicity assumption: options that were chosen more frequently in the past are more likely to be chosen again in the future. Our approach builds on a parametric model proposed by Le Goff et al. (2017), originally used to describe how ants in an ant colony select a path among many pre-existing paths. We provide a non-parametric generalization of this model, drawing inspiration from the Generalized Elephant Random Walk introduced by Maulik et al. (2024). We present a method of Maximum Likelihood Estimation of user preference under the above-mentioned monotonicity constraint and derive theoretical guarantees for our estimator. We also demonstrate the effectiveness of our method through both simulated experiments and real-world datasets. This talk is based on joint work with Moulinath Banerjee, Krishanu Maulik and Parthanil Roy.

ALL ARE CORDIALLY INVITED