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THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

PHD STUDENT SEMINAR

Statistical Inference for Kernel Ridge Regression under Covariate Shift

By

Mr Zhen HOU

Abstract

In this seminar, we present recent work on statistical inference for kernel ridge regression (KRR) under covariate shift. Covariate shift refers to the setting where the covariate distributions in the training and target domains differ, while the conditional distribution of the response given covariates remains unchanged. We study hypothesis testing for the regression function under the target-domain distribution using data collected from a source domain. Our approach is a multiplier bootstrap procedure based on truncated importance-weighted regularization. We discuss how to select the truncation level so that the regularized weighted source operator is compatible with the target operator under moment conditions on the density ratio (either second-moment or Bernstein-type assumptions). We establish nonasymptotic validity and sharpness of the procedure. The analysis combines a Bahadur-type expansion, Gaussian approximation in function space, and bootstrap approximation techniques.

Date : 13 May 2026, Wednesday

Time : 3:00pm

Venue : Room 5508 (Lifts 25/26)

All are Welcome!