Change point localisation and inference in high-dimensional regression models under dependence

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Abstract:

This talk focuses on change point localisation and inference in high-dimensional linear regression models with piecewise constant regression coefficients when covariates and errors are temporally dependent. We first propose a new computationally efficient dynamic programming algorithm to estimate change points. We prove the estimators enjoy localisation constancy and a sharp localisation rate characterized by the heavy-tailedness and the level of dependence of covariates and errors. Next, we construct a locally refined change point estimator and obtain its limiting distribution to perform inference on each change point location. Furthermore, we devise a consistent long-run (asymptotic) variance estimation method to improve usability.