



香港中文大學統計學系

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THE CHINESE UNIVERSITY OF HONG KONG

SEMINAR

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Estimation and model selection for nonparametric function-on-function regression

INVITED SPEAKER

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Professor

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University of California, Santa Barbara

TIME

Jun 23rd, 2025 (Mon) · 2:30 pm - 3:30 pm

VENUE

LSB C3 (G/F) · Lady Shaw Building C3 · CUHK

ABSTRACT

Regression models with functional response and functional covariates have recently received significant attention. While various nonparametric and semiparametric models have been developed, there is an urgent need for model selection and diagnostic methods. We will present a unified framework for estimation and model selection in nonparametric function-on-function regression. We consider a general nonparametric functional regression model with the model space constructed through smoothing spline analysis of variance (SS ANOVA). The proposed model reduces to some existing models when selected components in the SS ANOVA decomposition are eliminated. We propose new estimation procedures under either L_1 or L_2 penalty and show that combining the SS ANOVA decomposition and the L_1 penalty provides powerful tools for model selection and diagnostics.

We establish consistency and convergence rates for estimates of the regression function and each component in its decomposition under both the L_1 and L_2 penalties. Simulation studies and real examples show that the proposed methods perform well.