

2023년 제 5회 통계세미나

고려대학교 통계연구소와 BK21 통계학교육연구팀, 그리고 DS+가 다음과 같이 공동으로 세미나를 개최하오니 많은 참여 바랍니다.

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장소 : 고려대학교 정경관 206호

연사 : 이은령 교수 (성균관대 통계학과)

Functional Lasso Kernel Smoothing for High-dimensional Additive Regression

<Abstract>

Smooth backfitting has been proposed and proved as a powerful nonparametric estimation technique for additive regression models in various settings. Existing studies are restricted to cases with a moderate number of covariates and are not directly applicable to high dimensional settings. In this paper, we develop new kernel estimators based on the idea of smooth backfitting for high dimensional additive models. We introduce a novel penalization scheme, combining the idea of functional Lasso with the smooth backfitting technique. We investigate the theoretical properties of the functional Lasso smooth backfitting estimation. For the implementation of the proposed method, we devise a simple iterative algorithm where the iteration is defined by a truncated projection operator. The algorithm has only an additional thresholding operator over the projection-based iteration of the smooth backfitting algorithm. We further present a debiased version of the proposed estimator with implementation details, and investigate its theoretical properties for statistical inference. We demonstrate the finite sample performance of the methods via simulation and real data analysis.

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