

COLLOQUIUM

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Functional Least Angle Regression for High Dimensional Additive Models

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A405 Wells Hall

10:20 a.m. - 11:10 a.m.

Refreshments: 10:00 a.m.

Abstract

Least Angle Regression (LARS) proves to be an efficient algorithm that constructs piecewise linear solution path for high-dimensional linear regression, particularly for the problem with $p \gg n$. However, piecewise linear path algorithms have yet to be developed for nonparametric additive models. Motivated by the geometric interpretation of LARS, we propose a functional LARS algorithm to perform nonparametric regression and feature selection simultaneously for high-dimensional additive models. The proposed algorithm efficiently constructs the whole regularization path, which allows for adaptive tuning and efficient model selection. We investigate its asymptotic property and its connection to the Boosting and Lasso algorithms for additive models, and illustrate its finite-sample performance via simulations and applications.

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