

COLLOQUIUM

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Constrained Nonparametric Kernel Regression: Estimation and Inference

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Abstract

Restricted kernel regression methods have recently received much well-deserved attention. Powerful methods have been proposed for imposing monotonicity on the resulting estimate, a condition often dictated by theoretical concerns; see Hall, Huang, Gifford and Gijbels (2001) and Hall and Huang (2001), among others. However, to the best of our knowledge, there does not exist a simple yet general approach towards constrained nonparametric kernel regression that allows practitioners to impose any manner and mix of constraints on the resulting estimate. In this paper we generalize Hall and Huang's (2001) approach in order to allow for equality or inequality constraints on a nonparametric kernel regression model and its derivatives of any order. The proposed approach is straightforward, both conceptually and in practice. A testing framework is provided allowing researchers to thereby impose and test the validity of the restrictions. Theoretical underpinnings are provided, illustrative Monte Carlo results are presented, and an application is considered. (This talk is based on a joint work with CHRISTOPHER F. PARMETER and PANG DU.)

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