



THE UNIVERSITY OF
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Department of Statistics

DISSERTATION PROPOSAL

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Regularized Empirical Risk Minimization for High Dimensional
Time Series

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Jones 304, 5747 S. Ellis Avenue

ABSTRACT

Regularized empirical risk minimization have been well studied in the literature. In most of the theoretical investigations, it is assumed that the data are independent and identically distributed. In this talk, we consider regularized empirical risk minimization for high dimensional time series. In particular, we investigate the theoretical properties of L1-regularized estimates in generalized linear model in the context of high-dimensional time series. We derive nonasymptotic upper bounds on the estimation errors and prediction errors of the regularized estimates for stationary processes. A key technical contribution of the work is to establish tail probability of the suprema of increments of the empirical process for time series indexed by functional classes. We also introduce extensions to other L1-regularized empirical risk minimization problems for time series.

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