NANYANG TECHNOLOGICAL UNIVERSITY

SEMINAR ANNOUNCEMENT

Gradient Boosting for Partially Linear Additive Models in Survival Analysis

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Venue: MAS Executive Classroom 2, MAS-03-07
School of Physical and Mathematical Sciences

Abstract

The partially linear additive model is a special form of additive models, which combines the strengths of linear and nonlinear models by allowing linear and nonlinear predictors to coexist. One of the most interesting questions associated with the partially linear additive model is to identify nonlinear, linear, and non-informative covariates with no such pre-specification given, and to simultaneously recover underlying component functions which indicate how each covariate affects the response.

Survival analysis is a popular topic in statistics, and the Cox's model is one of the most commonly used models in survival analysis. Here the partially linear additive model is adapted to survival analysis, and gradient boosting approaches are applied to optimize the Cox's log partial likelihood, with simple linear regressions and univariate penalized splines are together used as base learners. Twin boosting is incorporated as well to achieve better variable selection accuracy. Simulation studies as well as real data applications illustrate the strength of our proposed algorithms.

Speaker Biography

Dr. Tang Xingyu obtained his B.Sc. degree in computational mathematics from Peking University, Beijing, China, and his Ph.D. in statistics from Division of Mathematical Sciences, Nanyang Technological University. His research interests include partially linear additive models, gradient boosting approaches, quantile regression, and survival analysis. Currently Dr. Tang is a Project Officer in Division of Mathematical Sciences, he has been giving tutorials for multiple courses including Mathematics, Probability and Statistics, Multivariate Analysis, and Data Mining.

Host: Division of Mathematical Sciences, School of Physical and Mathematical Sciences

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