Department of Systems Engineering and Engineering Management

Jointly organized with IEEE Technology and Engineering Management Society Hong Kong Chapter

Seminar Series

Modelling Regression Quantile Process using Monotone B-splines

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Date	17 May 2017 (Wednesday)
Time	10:30am - 11:30am
Venue	G5-316, 5/F, AC1

Abstract

Quantile regression as an alternative to conditional mean regression (i.e., least square regression) is widely used in many areas. It can be used to study the covariate effects on the entire response distribution by fitting quantile regression models at multiple different quantiles or even fitting the entire regression quantile process. However, estimating the regression quantile process is inherently difficult because the induced conditional quantile function needs to be monotone at all covariate values. In this paper, we proposed a regression quantile process estimation method based on monotone B-splines. The proposed method can easily ensure the validity of the regression quantile process, and offers a concise framework for variable selection and adaptive complexity control. We thoroughly investigated the properties of the proposed procedure, both theoretically and numerically. We also used a case study on wind power generation to demonstrate its use and effectiveness in real problems.

About the Speaker

Dr. Nan Chen is an Assistant Professor in the Department of Industrial and Systems Engineering at National University of Singapore. He obtained his B.S. degree in Automation from Tsinghua University, and M.S. degree in Computer Science, M.S. degree in Statistics, and Ph.D. degree in Industrial Engineering all from University of Wisconsin-Madison. His research interests include statistical modeling and surveillance of engineering systems, simulation modeling design, condition monitoring and degradation modeling. He is a member of IEEE, IIE, and INFORMS.

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SEEM Seminar 2016-2017/024