



Statistics Seminar

Statistical Fraud Detection

Tahir Ekin

Friday, November 20

12:00 - 1:00 pm

Abstract: Fraud instances are seen in a wide range of domains such as finance, telecommunications and health care. In addition to the monetary loss, fraud results in loss of confidence to the governmental systems and diminishes the overall system quality. For instance, in health care, while overpayments are estimated to correspond up to ten percent of expenditures, they also have direct adverse impacts on patient health. Statistical methods have become crucial to handle overpayments especially given the increasing size and complexity. This talk aims to provide an overview of the challenges and opportunities of using analytical methods for fraud assessment, with an emphasis on health care systems. First, various fraud data types will be illustrated with some real-world examples. Next, sampling, overpayment estimation and data mining methods will be discussed. In particular, the use of data mining methods have gained momentum to reveal hidden relationships and fraud patterns as well as for classification and prediction. The talk will conclude with a discussion of the proposed extensions in relevant domains such as handling improper payments and potential future work to address the practical needs such as integrated decision making.

Bio:

Dr. Tahir Ekin is an Associate Professor of Quantitative Methods in McCoy College of Business, Texas State University. His areas of expertise include statistical and analytical applications in health care fraud assessment and decision modeling under uncertainty. His book on health care fraud analytics titled "Statistics and Health Care Fraud: How to Save Billions" has been recently published. His scholar work has appeared in a variety of academic journals including Journal of the Royal Statistical Society Series C, International Statistical Review, Naval Research Logistics and Decision Analysis among others. He has been the recipient of Texas State University 2018 Presidential Distinction Award in Scholar Activities, and ASA/NISS y-Bis 2016 Best Paper Award. He has developed and taught courses in the areas of business statistics, optimization, data mining and analytics. Dr. Ekin holds a Ph.D. in Decision Sciences from The George Washington University, and a B.S. in Industrial Engineering from Bilkent University, Turkey. He is an elected member of International Statistical Institute and currently serves as Vice President of the International Society of Business and Industrial Statisticians.