ISI WSC 2019 Short Course Programme

COURSE TITLE :	**SC4 - Statistical Methods for Fraud Assessment**
DURATION :	1 Day
DATE :	17 August 2019
VENUE :	Sasana Kijang
REGISTRATION FEES :	Developed Country MYR 1,140 (Approximately EUR 240) Developing Country / Student* MYR 710 (Approximately EUR 150) ** For student, proof of enrolment is required*

INSTRUCTOR 1

Dr Tahir Ekin
Brandon Dee Roberts Associate Professor of Quantitative Methods
McCoy College of Business, Texas State University
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Tahir Ekin is the Brandon Dee Roberts Associate Professor of Quantitative Methods in McCoy College of Business, Texas State University. His areas of expertise include statistical applications in health care fraud assessment and simulation based stochastic optimization. His previous work experience includes a stint as a statistician working on fraud detection. He has a forthcoming book titled “Statistics and Health Care Fraud” as part of the ASA/CRC Series on Statistical Reasoning in Science and Society. His scholar work on fraud detection has been published in journals including International Statistical Review, The American Statistician and Applied Stochastic Models in Business and Industry. He has developed and taught courses in business statistics, optimization, data mining and analytics. Dr. Ekin also currently serves as ISBIS Vice President.

COURSE DESCRIPTION

Fraud instances are seen in domains such as finance, telecommunications, insurance and health care. For instance, in health care, overpayments are estimated to correspond up to 10 percent of expenditures. This short course presents the use of statistical methods for fraud assessment. Fraud data and its types will be introduced with some examples and pre-processing techniques. Next, the course will cover the use of visualization and unsupervised methods (outlier detection, clustering, and topic models) to describe data and reveal hidden relationships. Whereas supervised methods such as classification and regression can be

used with labelled data sets for prediction purposes. These methods will be discussed using examples from finance and health care industries. The course will conclude with a case study fraud analytics application using R. After completing the course, the attendees will have learnt various types of fraud, and the use of data and statistical methods for fraud detection using R.

SYLLABUS

Session 1 (Morning1): Introduction to fraud and data: Statistical fraud assessment and R, Importance of fraud detection, Definition and types of fraud with examples, Fraud data and pre-processing methods (sampling, missing values, outliers, categorization etc.)

Session 2 (Morning2): Descriptive Fraud Analytics: Visualization, Descriptive Statistical Methods, Outlier detection, Clustering, Topic models

Session 3 (Afternoon1): Predictive Fraud Analytics: Classification, Regression; Model Evaluation

Session 4 (Afternoon2): Case Study and Overview: The application fraud detection analytics with a case study using R, Overview: Future Directions and Challenges with Statistical Fraud Detection

TARGET AUDIENCE

Researchers in financial service companies, banks, insurance companies, government institutions, health care institutions, and consulting firms as well as fraud data analysts/scientists; consultants working in fraud detection.

This course is also expected to be of interest to early career statisticians that can gain insights about how different data mining/statistical methods are applied in this emerging crucial subject domain using R.