**The 11th Conference of the Asian Regional Section of
the International Association for Statistical Computing (IASC-ARS2019)
2-5 December 2019, Hong Kong**

Tutorial 1
Statistical network data analysis

Many dependence structure can be explained by network data. Statistical network data analysis is a useful tools in gaining insights from the network data. The focus of this tutorial is to explore various applications of statistical models to network data. We will begin with a brief introduction of common network measures and random graph models. This will be followed by the technique of community discovery of networks. The exponential random graph models to network data will be considered. If we have time, we can briefly study the application of random fields to perform predictions of endogenous variables. We will use R to demonstrate the techniques introduced in this presentation.

Instructor: Dr Simon Cheung Department of Statistics and Actuarial Science, The University of Hong Kong.

Short Bio: Dr Simon Cheung is an instructor in the department of statistics and actuarial science at the University of Hong Kong. His research activities are in statistical inference in network data analysis. He obtained a PhD degree in statistics from the Chinese University of Hong Kong in 2016.

Tutorial 2
Anomaly detection using unsupervised learning algorithms

Anomaly detection, discovering observations which are very different from the most of the observations in a body of data, is one of the vital processes in machine learning. The key learning task in anomaly detection is the identification of outliers which contain useful information underlying the abnormal behaviours. Identification of anomalies is important for fraud detection, medical diagnosis, cyber security, industrial damage detection, image processing. This tutorial provides an introduction to anomaly detection, and gives a review of the state-of-the-art algorithms for identifying anomalies. The tutorial will consist of reviewing two groups of algorithms for anomaly detection: a) algorithms based on clustering and dimension reduction; b) algorithms based on the k-nearest neighbour method. Examples will be demonstrated in R and SAS, but no prior experience with these is assumed.

Instructor: Dr Mehdi Soleymani, Department of Statistics, The University of Auckland, New Zealand.

Short Bio: Dr Mehdi Soleymani is a lecturer in department of statistics at the University of Auckland, New Zealand. His research activities are in statistical learning methods, particularly, developing new algorithms for classification and estimation problems. He obtained a PhD degree in statistics from the University of Hong Kong in 2011.

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