

## 平成27年度第9回情報数理学セミナー

日時：平成27年7月16日（木） 13:00～14:30

場所：大阪大学 産業科学研究所 管理棟1階講堂

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（研究所建物案内図⑤の1階となります。）

講師：Kai Ming Ting オーストラリア・フェデレーション大学教授

講演題目：Isolation Forest and recent development of isolation techniques for anomaly detection

講演概要：

Isolation Forest, first introduced in 2008, is an anomaly detector with three unique features. First, it isolates anomalies, instead of profiling the norm which is the commonly used approach. Second, it does not use a distance measure. Third, it requires only a small training sample to produce a high-performing detector. As a result, Isolation Forest is one of the fastest anomaly detectors and one of the few that can easily scale up to big data. Isolation Forest has been shown to be competitive to more recent state-of-the-art anomaly detectors by a number of independent assessments, and very effective in data streams, including an application to classification under emerging new classes in data streams, which demands the system to detect emerging new classes, classify known classes, and update models to enable classification of instances of the newly discovered class and detection of more emerging new classes in the data stream. This talk provides an introduction to Isolation Forest and describes the recent development of isolation techniques for anomaly detection, and isolation technique's relation to mass estimation.

Brief Bio:

After receiving his PhD from the University of Sydney, Kai Ming Ting had worked at the University of Waikato, Deakin University and Monash University. He joins Federation University Australia since 2014. He had previously held visiting positions at Osaka University, Nanjing University, and Chinese University of Hong Kong. His current research interests are in the areas of mass estimation, anomaly detection, ensemble approaches, data streams, data mining and machine learning in general. He

has served as a program committee co-chair for the Twelfth Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD-2008). He was a member of the program committee for a number of international conferences including ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, and International Conference on Machine Learning. He has received research funding from Australian Research Council, US Air Force of Scientific Research (AFOSR/AOARD), Toyota InfoTechnology Center, and Australian Institute of Sports, totaling over one million since 2004. Awards received include the Runner-up Best Paper Award in 2008 IEEE ICDM (for Isolation Forest), and the Best Paper Award in 2006 PAKDD. He is the creator of isolation techniques and mass estimation ([http://en.wikipedia.org/wiki/Mass\\_estimation](http://en.wikipedia.org/wiki/Mass_estimation)).