学术报告

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题目：**Consensus Clustering Paradigm for Brain Networks**

报告人：**Asoke K. Nandi**

时间：**2018 年 5 月 10 日上午 10:00**

地点：智信馆 527 室

组织单位：计算机科学与技术系

邀请人： 蒋昌俊教授

报告人简介：

Professor Nandi received the degree of Ph.D. in Physics from the University of Cambridge (Trinity College), Cambridge. He held academic positions in several universities, including Oxford, Imperial College London, Strathclyde, and Liverpool as well as Finland Distinguished Professorship. In 2013 he moved to Brunel University London, to become the Chair and Head of Electronic and Computer Engineering.

In 1983 Professor Nandi co-discovered the three fundamental particles known as W^+, W_- and Z^0 (by the UA1 team at CERN), providing the evidence for the unification of the electromagnetic and weak forces, for which the Nobel Committee for Physics in 1984 awarded the prize to two of his team leaders for their decisive contributions. His current research interests lie in signal processing and machine learning, with applications to functional magnetic resonance data, gene expression data, communications, and biomedical data. He has made fundamental theoretical and algorithmic contributions to many aspects of signal processing and machine learning. He has much expertise in "Big Data", dealing with heterogeneous data, and extracting information from multiple datasets. Professor Nandi has authored over 550 technical publications, including 220 journal papers as well as four books, entitled *Automatic Modulation Classification: Principles, Algorithms and Applications* (Wiley, 2015), *Integrative Cluster Analysis in Bioinformatics* (Wiley, 2015), *Blind Estimation Using Higher-Order Statistics* (Springer, 1999), and *Automatic Modulation Recognition of Communications Signals* (Springer, 1996). The h-index of his publications is 67 (Google Scholar) and ERDOS number is 2.

Professor Nandi is a Fellow of the Royal Academy of Engineering and a Fellow of six other institutions including the IEEE. He received many awards, including the IEEE Heinrich Hertz Award in 2012, the Glory of Bengal Award for his outstanding achievements in scientific research in 2010, the Water Arbitration Prize of the Institution of Mechanical Engineers in 1999, and the Mountbatten Premium of the Institution of Electrical Engineers in 1998. Professor Nandi is an IEEE Distinguished Lecturer (EMBS, 2018-2019).

内容提要：

Clustering algorithms can extract information from large datasets through model-free or data- driven approaches. However, in applications with real data with little a priori knowledge, it is often difficult to select an appropriate clustering algorithm and evaluate the quality of clustering results due to the unknown ground truth. It is also the case that conclusions based on only one specific algorithm might be biased, since each algorithm has its own assumptions of the structure of the data, which might not correspond to the real data.

In cases of multiple heterogeneous datasets from similar experiments, which may have been generated either in the same laboratory or different laboratories, the challenge is how to reach consensus conclusions. This presentation will address these issues and report on very recent results from applying Bi-CoPaM and UNCLES to analyse fMRI data to discover brain networks.

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