Topic:	**Statistical-Computational Tradeoffs in Graph Clustering**
Speaker:	**Dr Chen Yudong**
	University of California, Berkeley
Date:	**17 January 2014, Friday**
Time:	**2.00pm to 3.00pm**
Venue:	**EA-06-02** (map of NUS can be found at http://map.nus.edu.sg/)
Host:	**Dr. Xu Huan**

Abstract

In this talk we consider the problem of graph clustering -- identifying densely connected groups of nodes in a graph. We show that how we can, and have to, use computationally more expensive algorithms to achieve better statistical performance, i.e., to cluster noisier graphs. In particular, we consider the classical planted clustering model, and show that the parameter space can be partitioned in to four regimes corresponding to progressively noisier problems: simple, easy, hard, and impossible, such that (1) a near-linear time algorithm succeeds in the simple regime, but provably fails in the easy and hard regimes; (2) a polynomial time algorithm succeeds in the easy regime, but provably fails in the hard regime; (3) an exponential time algorithm succeeds in the hard regime, for which there is no known polynomial time algorithms; (4) all algorithms fail in the impossible regime regardless of their computational complexity. Our results apply to the setting with an unbounded number of clusters, and represent the best known bounds in the literature.

About the Speaker

Dr. Chen Yudong is currently a postdoc in the EECS department at the University of California, Berkeley in the group of Prof. Martin J. Wainwright. He obtained his Ph.D. in Electrical and Computer Engineering from the University of Texas at Austin in 2013, and his B.S. and M.S. from Tsinghua University. His research interests include machine learning, high-dimensional and robust statistics, and convex optimization, with applications in social networks, recommendation systems and air traffic control.

Admission is free. All are welcome to attend.