

For favour of posting

DEPARTMENT OF STATISTICS AND ACTUARIAL SCIENCE
THE UNIVERSITY OF HONG KONG

Departmental Seminar

Professor Yang FENG

Department of Statistics
Columbia University
USA

will give a talk
entitled

ARE THERE ANY COMMUNITY STRUCTURES IN A HYPERGRAPH?

Abstract

Many complex networks in the real world can be formulated as hypergraphs where community detection has been widely used. However, the fundamental question of whether communities exist or not in an observed hypergraph remains unclear. The aim of the work is to tackle this important problem. Specifically, we systematically study when a hypergraph with community structure can be successfully distinguished from its Erdos-Renyi counterpart, and propose concrete test statistics based on hypergraph cycles when the models are distinguishable. For uniform hypergraphs, we show that the success of hypergraph testing highly depends on the order of the average degree as well as the signal to noise ratio. In addition, we obtain asymptotic distributions of the proposed test statistics and analyze their power. Our results are further extended to nonuniform hypergraphs in which a new test involving both edge and hyperedge information is proposed. The novel aspect of our new test is that it is provably more powerful than the classic test involving only edge information. Simulation and real data analysis support our theoretical findings.

on

Monday, February 25, 2019

(Refreshments will be served from 10:45 a.m. outside Room 301 Run Run Shaw Building)

11:00 a.m. – 12:00 noon

at

Room 301, Run Run Shaw Building

Visitors Please Note that the University has limited parking space. If you are driving please call the Department at 3917 2466 for parking arrangement.

All interested are welcome