



The Hong Kong University of Science and Technology

Department of Mathematics

Seminar on Statistics

Combinatorial Inference

By

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Abstract

We propose a new family of combinatorial inference problems for graphical models. Unlike classical statistical inference where the main interest is point estimation or parameter testing of Euclidean parameters, combinatorial inference aims at testing the global structure of the underlying graph. Examples include testing the graph connectivity, the presence of a cycle of certain size, or the maximum degree of the graph. To begin with, we develop a unified theory for the fundamental limits of a large family of combinatorial inference problems. We propose new structural packing entropies to characterize how the complexity of combinatorial graph structures impacts the corresponding minimax lower bounds. On the other hand, we propose a family of practical structural testing algorithms to match the obtained lower bounds. We use a case study of brain network analysis to illustrate the usefulness of these proposed methods.

Date: Friday, 28 July, 2017

Time: 10:30a.m.-11:30a.m.

***Venue: Room 4472, Academic Building,
(near Lifts 25&26), HKUST***

All are welcome!