The Hong Kong University of Science & Technology

Department of Mathematics

PhD Student Seminar

Asymptotic Theory of Sparse Bradley-Terry Model

By

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Abstract

Studies of sparse paired comparisons in a large network arouse considerable research interests in recent years. For instance, we can consider a huge social network or large-scale online games. Ranking in these networks has many applications. However in these cases, paired comparisons among users are quite sparse. The Bradley-Terry model is widely used to estimate merits of subjects in the paired comparison. We prove the asymptotic theory of maximum likelihood estimation of Bradley-Terry model with sparse data. Specifically, our asymptotic theorem holds as the sparse probability is larger than or equal to $\log \llbracket t^3/t \rrbracket$ (Latex: $(\log t)^{3}/t$) for t (t) subjects. Numerical studies further support our results.

Date: **Monday, 7 May 2018**

Time: **4:00 p.m.- 5:00 p.m.**

Venue: **Room 4475 (near lift 25, 26)**

All are welcome!