

DSS Statistics Seminar

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<https://uniroma1.zoom.us/j/86881977368?pwd=SWRFcVFjMDZTa0lXZk05TE1zNm5adz09>

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An approximate empirical Bayes approach for the analysis of paired comparisons data

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The problem of rating a list of items on the basis of a set of paired comparisons frequently arises in a variety of fields including genetics, marketing, psychometrics and sport analysis. Standard examination of paired comparison data based on classical Bradley-Terry and Thurstone-Mosteller models becomes difficult in case of sparse tournaments where only a small fraction of all the possible paired comparisons is observed. In such situations, empirical Bayes estimation is attractive because it allows to borrow strength across the items abilities. However, empirical Bayes is numerically impractical in paired comparison models involving a large number of items because it requires to approximate intractable high-dimensional integrals. This paper discusses an approach to overcoming the numerical difficulties associated with the evaluation of the marginal likelihood through a combination of composite likelihood and empirical Bayes methods. The methodology is illustrated with simulations and an application to a sport tournament.



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