DEPARTMENT OF STATISTICS COLLOQUIUM SERIES

Texas A&M University

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FULLY NONPARAMETRIC MIXED EFFECTS MODELS: TESTING FOR THE FIXED MAIN EFFECT

ABSTRACT:

The talk will present a new nonparametric model for the two-way crossed mixed effects design which allows the random main and interaction effects to be correlated, and the variance of the interaction effect and error term to depend on the level of the fixed factor. In this model, we consider testing the hypothesis of no main fixed effects. The proposed test statistic is suitable also for unbalanced data. The asymptotic theory of the test statistic is derived under the Neyman-Scott framework, in the sense that the number of levels of both the fixed and random effects are large but the group sizes can remain fixed. In the non-additive case, the limiting distribution is an infinite weighted sum of independent χ_{12} random variables. An approximation to this limiting distribution is proposed. In the case of an additive model, the limiting distribution of the test statistic is normal. In addition we propose a novel bootstrap test procedure applicable to both cases. Extensive simulations indicate that the proposed test procedures outperform the classical F and Hotelling's procedures. An analysis of a dataset from the Mussel Watch Project is presented.

DATE: Thursday, October 29, 2009
TIME: 11:10 a.m. – 12:10 p.m.
PLACE: Room 150, Blocker

Refreshments will be served in the Statistics Conference Room at 10:30 am for those attending the seminar.