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## Generalizing the Generalized Variance Criterion for Simultaneous Prediction

*Tuesday, 17 September 2024 15:05 (20 minutes)*

In this talk, the problem of selecting a set of design points for universal kriging, which is a widely used technique for spatial data analysis, is further investigated. We are interested in optimal designs for prediction and present a new design criterion that aims at simultaneously minimizing the variation of the prediction errors at various points. This optimality criterion is based on the generalized variance (GV) and selects the design points in order to make simultaneous predictions of the random variable of interest at a finite number of unsampled locations with maximum precision. Specifically, a correlated random field given by a linear model with an unknown parameter vector and a spatial error correlation structure is considered as response. Though the proposed design is effective and there are efficient techniques for incrementally building designs for that criterion the method is limited to simultaneous predictions at a finite number of locations. We are convinced that this restriction can be lifted and the method may be generalized to minimizing the generalized prediction variance over the design space. Currently we have not yet solved the problem which addresses infinite determinants but we may present interesting and promising preliminary results.

### Type of presentation

Talk

### Classification

Mainly methodology

### Keywords

optimal design for simultaneous prediction

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