

MICHIGAN STATE UNIVERSITY
Department of Statistics and Probability

COLLOQUIUM

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Uncertainty Quantification with Gaussian Processes: Uniform Error Bounds and Convergence Properties

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10:20 AM - 11:10 AM

Refreshments 10:00 AM

C405 Wells Hall

Abstract

Kriging based on Gaussian random fields is widely used in reconstructing unknown functions. The kriging method has pointwise predictive distributions which are computationally simple. However, in many applications one would like to predict for a range of untried points simultaneously. In this work we obtain some error bounds for the kriging predictor under the uniform metric. It works for a scattered set of input points in an arbitrary dimension, and also covers cases where the covariance function of the Gaussian process is misspecified. These results lead to a better understanding of the rate of convergence of kriging under the Gaussian or the Matérn correlation functions, the relationship between space-filling designs and kriging models, and the robustness of the Matérn correlation functions.

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