

MICHIGAN STATE UNIVERSITY
Department of Statistics and Probability

COLLOQUIUM

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On Perfect Classification and Clustering for Gaussian Processes

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Abstract

According to the Hajek-Feldman property, two Gaussian distributions are either equivalent or mutually singular in the infinite-dimensional case. Motivated by singularity of a class of Gaussian measures, we first state a result based on the classic Mahalanobis distance and give an outline of the proof. Using this basic result, a joint transformation is proposed and its theoretical properties are investigated. In a classification problem, this transformation induces complete separation among the competing classes and a simple component-wise classifier leads to 'perfect classification' in such scenarios. In the second part of this talk, we shall discuss the problem of identifying groups in a mixture of Gaussian processes (clustering) by using a new transformation involving Mahalanobis distances. It is curious to note that the proposed method is useless in homoscedastic cases, however, it yields 'perfect clustering' for groups having differences in their covariance operators.

(a joint work with Prof. Juan A. Cuesta-Albertos)

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