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THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON APPLIED MATHEMATICS AND STATISTICS

An Invitation to Information Geometry

By

Prof. Jun ZHANG
University of Michigan Ann Arbor and SIMIS

Abstract

Information Geometry is the differential geometric study of the manifold of probability models, and promises to be a unifying geometric framework for investigating statistical inference, information theory, machine learning, etc. Central to such manifolds are "divergence functions" (in place of distance) for measuring proximity of two points, for instance Kullback-Leibler divergence, Bregman divergence, etc. Such divergence functions are known to induce a beautiful geometric structure of the set of parametric probability models. This talk will use two examples to introduce some basic ingredients of this geometric framework: the univariate normal distributions (a case with continuous support) and the probability simplex (a case with discrete support). The fundamental duality e/m duality is explained in terms of two most popular parametric statistical families: the exponential and the mixture families. This introduction is intended for an audience with little background in differentiable manifold; instead it only assumes the knowledge of multi-variable calculus.
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Date : 25 April 2024 (Thursday)
Time : 3:00pm
Venue : CYTLTL (CMA Lecture Theater)

All are Welcome!