

GEOMETRY AND PRIOR INFORMATION

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Abstract

This tutorial presents an overview of Bayesian Information Geometry (BIG). The BIG approach to inference provides an objective framework for quantifying prior information based on maximum entropy that extends the pioneering vision of Jaynes with the Information Geometry of Amari. The BIG offspring is a new Geometric Theory of Ignorance. This theory is of general applicability and it appears to throw new light on fundamental problems of inference. BIG new developments and some open problems will be presented along with the tutorial. Here is a list of some of the subjects that may be touched: Why Sir Harold Jeffreys did not know about Jeffreys prior. The end of faith and the raping of the holy bayesian Likelihood Principle. Ignorance as negative free energy. Optimality of scalar field conjugate priors. The notion of Antidata. New role of topological and geometrical invariants for model selection. Grisha Perelman's Action. Robbins, Stein and Komaki's shrinkage. Statistical singularities. Many open problems. Automatic model production. A conjecture: The average scalar curvature of a bitnet is always half an integer.