



Information Geometry and Applications in Financial Markets

Charles Casimiro Cavalcante

Universidade Federal do Ceará

13/09/2022 - terça-feira

14h - Sala 222

Resumo: In this work, we investigate the information geometry approach to propose a portfolio selection model based on a mean-divergence criteria, adapted to financial returns distributed according deformed exponential probability densities. Fixed a desired expected return, the method reduces to the minimization of a risk premium defined in terms of a statistical divergence, In the particular case of Gaussian returns, we recover the classical mean-divergence model by H. Markowitz. Next, we reformulate the projection pricing theory by Luenberger in the context of divergences as risk measures. This allowed us to define single factor models, including a variant of the CAPM whose beta coefficients depend on a Fisher metric that plays the role of a generalized covariance matrix. The eigenvalues of this matrix are used to define an extended notion of principal curves that adapts the work by Hastie and Stuetzle to the case of deformed exponentials and their correspondent Bregman divergences. It can be shown that the statistical signal processing tools can be adapted to handle other applications in the finance market.