

DSCRC

Statistics and Data Science Seminar



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Mean Independent Component Analysis for Multivariate Time Series

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11:00 – 12:00 AM

Rm. 925, 310 Building

In this talk, we introduce the mean independent component analysis for multivariate time series to reduce the parameter space. In particular, we seek for a contemporaneous linear transformation that detects univariate mean independent components so that each component can be modeled separately. The mean independent component analysis is flexible in the sense that no parametric model or distributional assumptions are made. We propose a unified framework to estimate the mean independent components from a data with a fixed dimension or a diverging dimension. We estimate the mean independent components by the martingale difference divergence so that the mean dependence across components and across time is minimized. The approach is extended to the group mean independent component analysis by imposing a group structure on the mean independent components. We further introduce a method to identify the group structure when it is unknown. The consistency of both proposed methods is established. Extensive simulations and a real data illustration for community mobility is provided to demonstrate the efficacy of our method.