

Statistical inference for complex data

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Abstract

In recent years the amount, the diversity and specially the complexity of the data has considerably increased. This new flow of data, coming from diverse sources like social networks, biochemistry, health care systems, politics, have given rise to new well known and closely related terms like "Big-Data", "manifold learning" and "complex data?". They can be an image, a video, a sub-graph on a network, a functional data among other, which make it difficult to link, match, cleanse and transform data across systems with traditional methods. Data on unstructured metric spaces. Typically statistical approach that perform reasonably well for small and well structured will fail since in most of them there is no an Euclidean structure on the space. Some examples are the space of graphs, feature spaces, manifolds, or Banach spaces. To handle them new mathematical and computational methods are needed. Detection, estimation and testing problems will be addressed in this session. In particular, Manifold learning, which is the result of the confluence of at least three classical theories, (a) directional (or circular) data where the aims are similar to those of the classical statistics but the data are supposed to be drawn on the sphere or, more generally, on a lower-dimensional manifold; (b) the study of non-linear methods of dimension reduction, aiming at recovering a lower-dimensional structure from random points taken around it, and (c) some techniques of stochastic geometry and set estimation whose purpose is to estimate some relevant quantities of a set (or the set itself) from the information.

Conferences:

Stochastic detection of some topological and geometric features

Alejandro Cholaquidis, Universidad de la República, Uruguay

Depths on manifolds

Leonardo Moreno, Universidad de la República, Uruguay

A goodness-of-fit approach for the functional linear model with functional response.

Manuel Febrero Bande, Universidad de Santiago de Compostela, Spain

Detection and identification for complex data.

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