PhD program in Statistics

DSS Statistics Seminar

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In person **Room 34 (CU002)**

Webinar **https://uniroma1.zoom.us/j/86881977368?pwd=SWRFcVFjMDZTa0lXZk05TE1zNm5adz09**

Passcode: 432940

Density modelling with Functional Data Analysis

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Recent technological advances have eased the collection of big amounts of data in many research fields. In this scenario, a useful statistical technique is density estimation which represents an important source of information. One dimensional density functions represent a special case of functional data subject to the constraints to be non-negative and with a constant integral equal to one. Because of these constraints, densities functions do not form a vector space and a naive application of functional data analysis (FDA) methods may lead to non-valid estimates. To address this issue, two main strategies can be found in the literature. In the first, the probability density functions (pdfs) are mapped into a linear functional space through a suitably chosen transformation. Established methods for Hilbert space valued data can be applied to the transformed functions and the results are moved back into the density space by means of the inverse transformation. In the second strategy, probability density functions are treated as an infinite dimensional compositional data since they are part of some whole which only carry relative information. In this work, by means of a suitable transformation, densities are embedded in the Hilbert space of square integrable functions where standard FDA methodologies can be applied.

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