Séminaire de Probabilités et Statistique

Mardi 11 octobre à 14h00
Salle de conférences

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Models for the analysis of temporal data

This talk is motivated by two applications to the medical setting. The first one consists in analyzing the evolution of the patient care unit according to the time. This evolution can be represented by the trajectories of a jump process with a continuous time and a finite set of states. We will use the extension of multiple correspondence analysis to an infinite set of variables, the optimal codings of the states over time are approximated on an arbitrary finite function basis. This allows dimension reduction, representation optimization and visualization of data in smaller dimensional spaces. We will present this methodology implemented in the R package cfda available on the CRAN.

The second one is motivated by the recurrent admissions of elderly people at hospital. It can be modeled by a censored counting process. The intensity of this process can be specified as functions of covariates as in the Andersen-Gill model. However, accounting for these covariates is often not sufficient to explain the observed inter-patient heterogeneity. We thus propose a mixture model which takes into account this heterogenity and allows to perform the patients' clustering. The behavior of the model is studied on simulated data. The analysis a real medical datasets is also performed.