

Nonparametric and semiparametric inference has reached a maturity stage with the transfer of the developed methods into applied fields such as Medicine, Biology, Economics, Engineering or Environmental Sciences. Spatio-temporal prediction methods for pollutant analysis, learning techniques in Genetics, new variable selection procedures, reliability, image analysis or portfolio design are some examples of the use of curve estimation-testing methods (curves such as the density or the regression function). In this fields, the research group has produced relevant contributions.

The research group for developing this new project entitled Nonparametric inference: modeling, estimation, testing and applications (Innpar) has been designed with the aim of maintaining the research excellence previously acquired, disseminating research results, training new researchers and fostering two-way relations with the productive sector, keeping and establishing new collaborations for technological transfer.

Bearing in mind the previous experience, the group capabilities and the state of the art, within Innpar we will approach modeling problems for functional and high dimensional data, directional data, spatial and spatio-temporal process and incomplete data. In addition, from a nonparametric perspective, inference problems in random effects, structured and diffusion models will be studied. Estimation and testing methods in quantile regression and set estimation will be explored. The project methodology will be based on theoretical developments, validation of the methods through simulation studies, software implementation and the design of exploratory tools at the scientific community disposal. The procedures developed within Innpar will be distributed in two working packages. A first package concerning theory and methods will be complemented with a second package, gathering exploratory tools and software, along with potential applications in Environmental Sciences and Finance and new collaborations in Geolinguistics. Nine research lines, seven PhD students, four international researchers and nine people in the research teams summarize Innpar in numbers.

Innpar is a collaborative-focused project, with links between the different research lines, and open to practical problems, which can be approached from different perspectives. This collaboration will strength synergies between research lines, encouraging a joint-learning philosophy in the group. Research excellence, accessible exploratory methods and software production are the foundations of Innpar.