Modelos de Optimización, Decisión, Estadística y Aplicaciones

DEPARTAMENTO DE ESTATÍSTICA, ANÁLISE MATEMÁTICA E OPTIMIZACIÓN

FACULTADE DE MATEMÁTICAS

Short Course

Nonparametric density and regression estimation under measurement errors

Abstract:

In this short course we intend to give a basic treatment of statistical methods in nonparametric estimation of a density or a regression function, in case of measurement errors. The course starts with an introduction to measurement errors, providing some examples, highlighting different types of measurement errors, and with demonstrations why measurement errors cannot be ignored.

A large part of the course deals with nonparametric density estimation in case of measurement errors. The main focus is on kernel density estimation, including (asymptotic) properties, choice of kernel and impact, and bandwidth selection methods. Attention is given to various observational schemes. Some other estimation methods, for example maximum likelihood estimation, are discussed in less detail.

For nonparametric estimation of a regression function it is explained how methods such as Nadaraya Watson estimation and local linear estimation need to be adjusted when there are measurement errors. A brief discussion on some other methods is given.

Measurement errors occur in many applications. We give some insights on how the methods discussed in the previous parts serve as a basis in other settings. A final part of the course briefly discusses some methods for nonparametric density and regression estimation for circular data, under measurement errors.

Programación:

- Part I: Density estimation in case of measurement errors.
- Part II: Regression estimation in case of measurement errors.
- Part III: Density and regression estimation for circular data.

Horario:

- Martes 13 de maio 2025: 09:00 - 10:30 e 11:30 - 13:00.
- Mércores 14 de maio 2025: 09:00 - 10:30 e 11:30 - 13:00.

Relatora: Irène Gijbels (KU Leuven, Belgium).
Data: 13 - 14 de maio 2025.
Duración: 6 horas.
Lugar: Aula 4 da Facultade de Matemáticas (USC). Formato híbrido.

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CENTRO DE INVESTIGACIÓN E TECNOLOXÍA MATEMÁTICA DE GALICIA