Resampling methods and computational statistics

Characteristics
- 3 ECTS credits
- Compulsory course for master in statistics
- Spring Semester
- Course: 2 hours
- Evaluation: written exam – 2 hours
- Prerequisite: basic notions of probability and statistics, knowledge of the R software.

Teaching Team
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Objectives
Master the theoretical and practical aspects of the computer based methods in statistics. At the end, the student should be able to apply the methods presented in this course to his or her own research studies.

Contents
The course introduces a number of methods that make use of computer resources to do statistical analysis and modeling. Some of these methods use resampling and repeated simulations to calculate standard errors, confidence intervals, significance tests, etc. The course emphasizes the practical side of the methods, by illustrating the theoretical issues with practical applications using the R software.

- Random variables generation
- Elements of Monte Carlo statistical methods
- EM algorithm
- Resampling methods for estimating and testing (jackknife, bootstrap, tests, resampling methods for model assessment and selection).

Textbooks (the books are not required)


