Optimization for data processing at a large scale
Master ATSI - Research Seminar
Emilie Chouzenoux
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Abstract
In biology, medicine, geosciences, or astronomy, large amounts of data are being collected thanks to constant improvements of acquisition devices. This raises the need for sophisticated optimization tools able to deal with cost functions with a complex structure and many variables, at a low computational cost, stretching traditional techniques to their limits.

The objective of this seminar is to introduce the theoretical background which makes it possible to develop efficient optimization algorithms for large scale problems. This seminar will be mainly focused on nonlinear optimization tools for dealing with convex and nonconvex problems. Proximal tools, Majorization-Minimization strategies and alternating minimization approaches will be presented. Illustrations of these methods on various problems will be provided.

The following concepts will be presented:

- Introduction to optimization problems
- Majorization-Minimization approaches
- Application examples in signal/image processing

References


