Course Outline

Continuous Optimization

Oxford University Computing Laboratory, HT 2006

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Outline of Lectures

Lecture 1: A gentle introduction.
Lectures 2-3: Optimality conditions and why they are important.
Lectures 4-6: Line-search methods for unconstrained minimization.
Lectures 7-9: Trust-region methods for unconstrained minimization.
Lectures 10: Active-set methods for linearly-constrained minimization.
Lectures 11-12: Penalty and augmented Lagrangian methods for constrained minimization.
Lectures 13-14: Interior-point methods for constrained minimization.
Lectures 15-16: Sequential quadratic programming (SQP) methods for constrained minimization.

What we don't have the time to cover:

- General convex optimization.
- Exploiting structure in large-scale problems.
- Heuristics for global optimization.

Lectures

- Mondays 2–3pm, Fox Room, Comlab.
- Wednesdays 2–3pm, Fox Room, Comlab

Materials

- Course website:
  www.numerical.rl.ac.uk/nimg/oupartc/

- Slides of lectures can be downloaded from web page.

- Self-contained lecture notes for lecture course posted on web page.

- Problem sets 1-6 for classes in weeks 3-8, posted on web page.

Further Reading:

- J.Nocedal and S.Wright "Numerical Optimization", Springer 1999, ISBN 0-387-98793-2. Available in most college libraries and at OUCL library.

- R.Fletcher "Practical Methods of Optimization", second edition, Wiley 1987, ISBN 0-471-91547-5. Available in most college libraries.

Classes

- Tutor: Denis Zuev (zuev@maths.ox.ac.uk)

- Time, place: Mondays Weeks 3–8 between from 10-12 in the Fox Room [TBC].

- Handing in solutions: 9AM on the day of the class. To be put in Denis Zuev's pigeon-hole at Maths Institute.

Exam

- 2 questions each on two different parts of the paper, i.e., 4 questions in total.

- Two practice exams will be made available in TT06.

- Two revision classes in TT06.

Questions about course organisation?