Introduction

- course outline
- basic course information

Tentative course outline

First-order algorithms (appr. 1/3 of the lectures)

- gradient method and extensions that are more flexible and/or faster
- topics: gradient method, subgradient method, mirror descent, proximal gradient method, accelerated proximal gradient method, conjugate gradient method

Decomposition and splitting algorithms (appr. 1/3)

- decompose optimization problem into sequence of easier subproblems
- subproblems may be solved numerically, or have closed-form solution
- topics: dual decomposition, multiplier methods, ADMM, Douglas–Rachford splitting, primal-dual splitting

Tentative course outline

Second-order algorithms for unconstrained optimization (appr. 1/6)

- Newton's method and extensions with lower complexity per iteration
- topics: Newton's method, inexact Newton method, quasi-Newton methods, Gauss-Newton method

Interior-point algorithms for conic optimization (appr. 1/6)

- methods for conic optimization
- topics: self-concordance, path-following methods, primal-dual methods for symmetric cones (second-order cone and semidefinite programming)

Course information

Course material

- lecture notes and homework assignments are available at

  www.seas.ucla.edu/~vandenbe/ee236c

- homework solutions on CCLE course website

Course requirements (see syllabus on CCLE website)

- (approximately) weekly homework
- project proposal, due at the end of week 5 (May 3)
- final project report, due on June 10