Introduction

- course outline
- basic course information

Tentative course outline

First-order algorithms

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

Decomposition and splitting algorithms

- 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 methods

Tentative course outline

Second-order algorithms for unconstrained optimization

- 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

- 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 on Bruin Learn course website

  bruinlearn.ucla.edu/courses/129982

- notes from previous years available on

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

Course requirements

- (approximately) weekly homework
- project proposal, due at the end of week 5 (April 29)
- final project report, due on June 6