Module 7: Convex Optimization through CVX and CVXOpt

Background Reading Suggestions

Due 31 Jan 2013

BV04 - refers to the book “Convex Optimization” by Stephen Boyd and Lieven Vandenberghe. It can be found at <http://www.stanford.edu/~boyd/cvxbook/> for download for free.

F04 – refers to a set of notes on authored by Rob Freund (a professor at MIT) for a class Nonlinear Optimization. They are available from MIT OCW here:

<http://ocw.mit.edu/courses/sloan-school-of-management/15-084j-nonlinear-programming-spring-2004/lecture-notes/lec23_semidef_opt.pdf>

Convex Sets

* BV04 Sec. 2.1.4

Convex Functions and Convex Calculus

* BV04 Sec. 3.1.1
* BV04 Sec. 3.1.5
* BV04 Sec. 3.2

Convex Optimization Problems

* BV04 Sec 4.1

Semidefinite Programming

* BV04 Sec. 2.2.5
* F04 Sec. 3
* F04 Sec. 4

Newtons Method

* Read through the algorithmic description in Rob Freund’s Notes: <http://ocw.mit.edu/courses/sloan-school-of-management/15-084j-nonlinear-programming-spring-2004/lecture-notes/lec3_newton_mthd.pdf>

Customizing Interior Point Solvers (Advanced)

* This is an advanced topic. If you’re interested, you may skim this paper. <http://www.ee.ucla.edu/~vandenbe/publications/mlbook.pdf>

We’ll explore some of the examples in the session (time permitting)