ESI 6341: Introduction to Stochastic Optimization

Instructor

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Homework 6: Kelley's Method

[20 Points]

This is individual homework and no collaboration is allowed. You must *type* all your answers. Hand-written answers will not be considered for grading. Please clearly state your assumptions. Otherwise see the TA or instructor for clarification. Finally, no late homework will be accepted for grading – late homework will result in a score of zero.

Due: Thursday, April 19, 2018

Problem. Code Kelley's algorithm and then do the following problems:

(a) Use your code to solve Min $f(x)$ s.t. $x \in X$, where $f(x)$ is a convex function and X is a convex set, both of your choice!

(b) Use your code to solve $f(x) = (x - 2)^2 + 1$ with $X = \{-1 \le x \le 4\}$ with $x^0 = -1$.

(c) Write a small report stating your $f(x)$ and X, and detailing the steps of the algorithm and your computational results on the two problems. The computational results should be reported in a table and must include iteration number $k, x^k, f_k(x^k), f(x^k)$, for all k, and the optimal solution. Finally, make a plot that shows $f(x)$ and $f_k(x^k)$ for all k.