Optimization Methods in Finance

Homework assignment #1

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Problems

1. Consider the data in the attached file Assignment1_data.csv. Assume that the data is generated by the model

$$g(x, T) = x_1 + x_2 \exp(x_3 T) + x_4 \exp(x_5 T),$$

   where $x = (x_1, x_2, x_3, x_4, x_5) \in \mathbb{R}^5$. Use the Levenberg-Marquardt method to determine the values of x.

2. Investigate the performance of the gradient descent algorithm applied to the Rosenbrock function. What values of the initial guess lead to convergence?

3. Investigate the performance of the differential evolution optimization applied to the Rosenbrock and Ackley functions. Carry out the analysis for different initial guesses and population sizes.

This assignment is due on November 12