Numerical Optimization
Handin 1 - Peer Review

Dmitry Serykh (qwl888)

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1 Introduction

I am reviewing the report by Michael Emil Rosenstrøm (kfg364).

2 Review

2.1 General Structure

The report is structured as a sequence of isolated sections. An alternative format could be chosen, where the whole report would be logically connected and the reader could follow the overarching line of thought.

2.2 Plots

The plots for all five functions are provided. Furthermore, two types of plots for each are included: a surface plot and a curve plot. The former is useful for getting an overview of the shape of the functions, but finer details could be obfuscated. The latter can be used to get the finer details, especially around the saddle points of the functions. However, the color-bar on the curve plot is hard to read because the boxes are not filled with colors. That could be easily mitigated by choosing a different color-bar style.

The curve plot could further be supplied by a "temerature-plot" using `imshow`, that way even more finer details of the function could be captured. Furthermore, the contour plot could be made easier to read by making the surface transparent.

The biggest problem with this report is the lack of argumentation for the correctness of the given plots. Most of the parts from the theoretical parts should have been included in the discussion.

2.3 Theoretical Part

The proofs for the Hessian matrix and minimizers of Rosenbrock and Ellipsoid functions are provided and easy to follow. However, the argument for the gradient correctness is lacking and could have been argued for using the Taylor Theorem. The gradient and Hessians for all functions are provided.

The proof for correctness of the re-formulation of the $\log 1 + \exp x$ is provided. However, the actual argument for why the alternative formulation is better is missing.