Rosenbrock function minimizing

Method of Steepest Descent
and Newton's Method

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Task description

Project for Introduction to Artificial Intelligence course during studies on Warsaw University of Technology.
Description of the task:
Minimizing of Rosenbrock's function with steepest descent and Newton's method.
Rosenbrock's function:

$$f(x, y) = (1 - x)^2 + 100 * (y - x^2)^2, -5 <= x <= 5, -5 <= y <= 5$$

User's manual

To start the program, user have to get in to directory with files and type **python3 minimizing.py** in command line console with proper arguments. User have to provides argument **'newton' or 'gradient'** to choose witch method program should use, then gives x and y coordinates of start point and value **'True' or 'False'**.If user selects False, then have to provide also **rate(-r) and iteration(-i)** arguments. If user selects True, method will be call with default arguments.
Program will show 3D chart with minimization steps and will print out point found which suppose to be minimum of the function.
Examples of program calling:
1**python3 minimizing.py gradient -4 -1 True**
2**python3 minimizing.py newton -3 -4 False -r 0.5 -i 55**

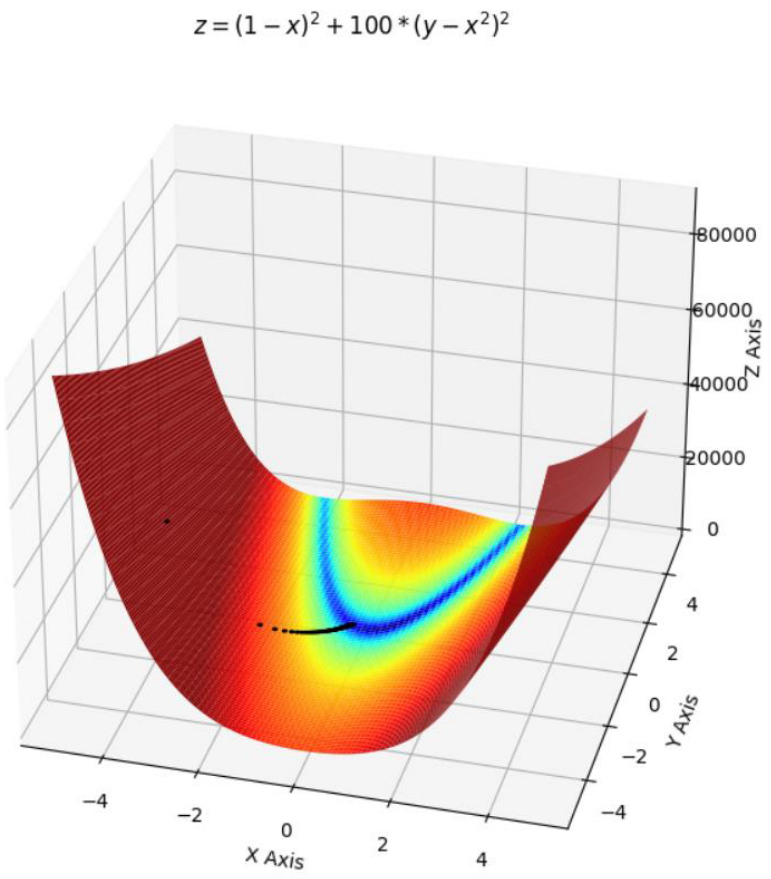

Figure 1: Steepest Descent method from point (-4; -1)

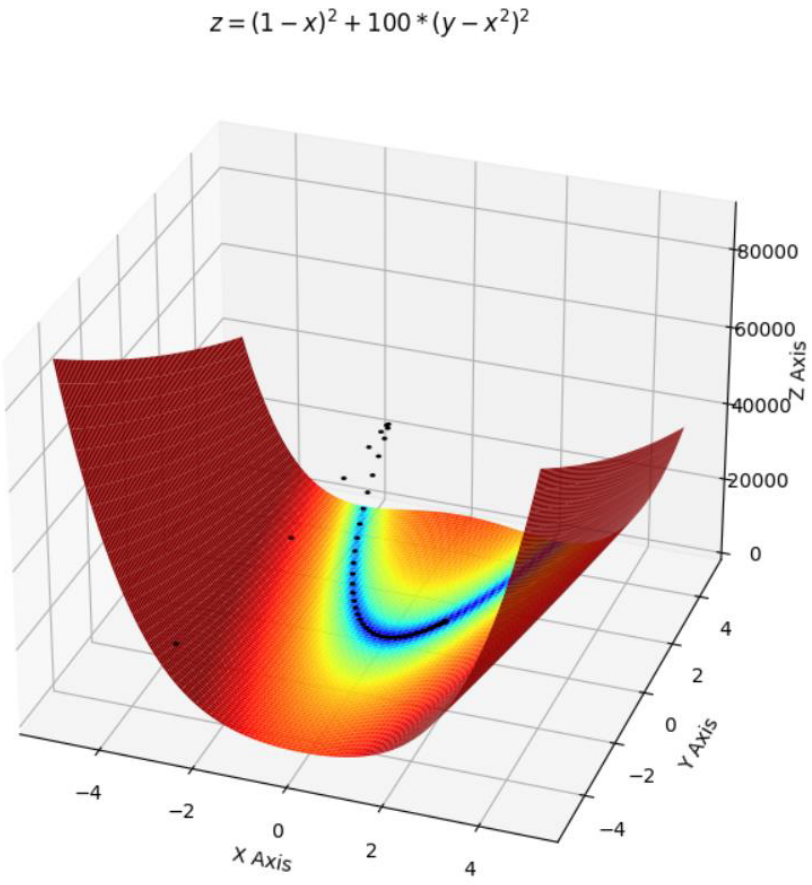

Figure 2: Newton's method from point (-3; -4)