

Practical Applications of Machine Learning

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Homework 2 – **Deadline 20th October 2024**

$$f(x) = x^2 + 100c \text{ where } c = 10$$

1. Derive $\frac{df(x)}{dx}$
2. Perform gradient descent for 5 steps by using the initial value of $x = 5$ and learning rate of 0.3. Show your work in details.
3. Compute the squared error between the final value of x and the global minimum value of x (i.e., the value of x where $f(x)$ is the lowest. Show your work in details.
4. Write a python script to implement Questions (2) and (3)
5. Using ChatGPT or any LLMs to solve Questions (1) and (2). Screenshot the prompts and outputs.
6. Using ChatGPT or any LLMs to implement Question (2). Screenshot the prompts and outputs.
7. Execute the output script in Question 6 in Python and screenshot the script and its output.