AIDI-1002 – AI Algorithms 1

Lab #1 Linear Regression

Instructions:

Please write a program (in Jupyter notebook) to calculate the optimal value of a second order polynomial (e.g. $f(x) = 2x^2 - 12x - 13$) using gradient descent.

Harness:

predicted_optimal_value = my_gradient_descent(polynomial, starting_point, learning_rate*)

Actual_optimal_value: $f'(x) = 0 \Rightarrow 4x-12 = 0 \Rightarrow x = 3$

Cost = | predicted_optimal_value – actual_optimal_value |

*learning_rate is used to control the step size during the gradient descent process

Example: $x_{new} = x_{old}$ – learning_rate * gradient@x_{old}

Program output

Actual Optimal Value: <placeholder>

Predicted Optimal Value: <placeholder>

Cost: <placeholder>

Submission Format

Please submit your work in a Jupyter notebook containing the output of your program