	<b>SR UNIVERSITY</b> <b>Campus Warangal</b>	
	<b>Program:</b> II - B.Tech (CS& AI)	
	<b>Professor(a):</b> Dr. Venkataramana Veeramsetty, Professor	
	<b>Department:</b> Computer Science and AI	<b>Semester:</b> II
<b>Generative AI - Assignment - 3</b>		
Instructions:		

1. (1 ponto) Write Python code without using any libraries to find the value of x at which the function f(x) shown in equation (1) has minimum value. Consider Gradient Descent Algorithm.

$$f(x) = 5x^4 + 3x^2 + 10 \quad (1)$$

2. (1 ponto) Write Python code without using any libraries to find the value of x and y at which the function g(x,y) shown in equation (2) has minimum value. Consider Gradient Descent Algorithm.

$$f(x) = 3x^2 + 5e^{-y} + 10 \quad (2)$$

3. (1 ponto) Write Python code without using any libraries to find the value of x at which the sigmoid function z(x) shown in equation (3) has minimum value. Consider Gradient Descent Algorithm.

$$z(x) = \frac{1}{1 + e^{-x}} \quad (3)$$

4. (1 ponto) Write Python code without using any libraries to find the value of optimal values of model parameters M and C such that the model's Square Error Value shown in equation 4 will be minimum. It means model gives output close to expected output as shown in Figure 1

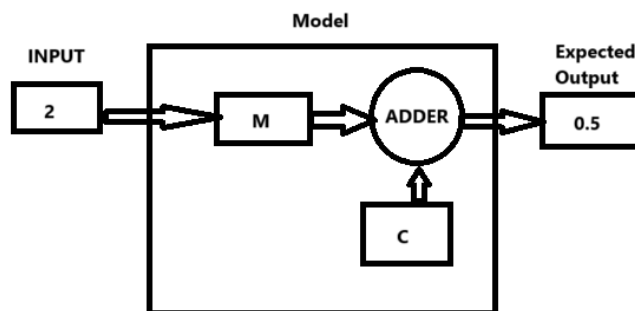


Figura 1: AI Model

$$SE = (ExpectedOutput - PredictedOutput)^2 \quad (4)$$

- **Expected Learning Outcomes from this assignment related to python**

- Students are able to understand gradient descent algorithm to solve both single and multi variable unconstrained non linear optimization problems
- Students are able to write code in python for gradient descent algorithm

- **Naming cinvention**

- Report File Name: RollNo\_Week No.\_Assignment No.

**Date:** 2025-01-09