sru	**SR UNIVERSITY** **Campus Warangal**
	Program: II - B.Tech (CS& AI)
	Professor(a): Dr. Venkataramana Veeramsetty, Professor
	Department: Computer Science and AI **Semester:** II
	Generative AI - Assignment - 5.1

Instructions:

1. (1 ponto) Design a multi-layer ANN architecture with one input, one hidden, and one output layer. Assume a linear activation function in the output layer and a sigmoid activation function in the hidden layer.

   - Write Python code for a backpropagation algorithm with gradient descent optimization to update weights and bias parameters of the ANN model with training data shown in Table 1.
   - Calculate the mean square error with training and testing data shown in Table 2.
   - Write Python code that reads the input data [x1 and x2] from the user. Predict the output with deployed ANN model

Tabela 1: Training Data

x1	x2	y
0.1	0.2	0.3432
0.2	0.3	0.3490
0.3	0.4	0.3548
0.6	0.7	0.3720
0.7	0.8	0.3776
0.8	0.9	0.3832

Tabela 2: Test Data

x1	x2	y
0.4	0.5	0.3606
0.5	0.6	0.3663

   - **Expected learning Outcomes from this assignment related to python**
     - Students are able to understand how backpropagation algorithm helps to update model parameters of multilayer ANN
     - Students are able to write code in python for backpropagation algorithm
     - Students are able to design architecture of ANN based on problem statement
     - Students are able to derive mathematical expression for change in weights and bias parameters for different activation functions
   - Naming cinvention
     - Report File Name: RollNo_Week No._Assignment No.

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