

CHRIST (Deemed to be University)
Department of Computer Science
Master of Artificial Intelligence and Machine Learning

Course: MAI371 – Deep Learning

Exercise No: LAB Exercise – 1

Date: 16 – 02 – 2024

Duration: 2 Hrs

Question (10 Marks)

1. Create a Python implementation of the perceptron learning algorithm to train neural networks for the following boolean functions: a) AND, b) OR, c) NAND, d) XOR. Begin by manually assigning weights and displaying the number of errors between positive and negative outcomes. Then, utilize the perceptron learning algorithm to adjust the weights and eliminate these errors by finding the optimal weight configuration.

2. Develop a Python script to utilize the gradient descent algorithm for locating the global minima of the following equations. Additionally, ensure the program prints the number of iterations taken to identify the global minima.

Note: Visualize all the results in graph

i) $f(x) = x^2 - 2x + 2$

ii) $f(x, y) = (1 - x)^2 + 100(y - x^2)^2$

Evaluation Rubrics:

Execution code1 :4 marks

Execution code2:4 marks

Visualization:2 marks

Total:10 Marks

General Instruction:

1. Ensure that your code includes relevant comments to enhance readability and understanding. Subsequently, upload your code to GitHub for version control and collaborative access.
2. Include descriptive comments within the code, explaining its functionality and logic.
3. In

the Google Classroom submission, include the GitHub URL where your code is hosted.

4. Attach a PDF document named "your_register_number_exercise_No.pdf" to the submission. The PDF document should include screenshots of the code and the output screen.
5. Upload the answer document & GitHub URL in Google Classroom on or before the deadline mentioned. Evaluation will not be considered for late submission