

**Artificial Intelligence**

**Module 1 and 2 Assignment**

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**Assignment Questions**

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**Tasks to be performed:**

1. Define a use case of Deep Learning in your current domain (if fresher, pick any of your favorite) and propose a solution through DL.
2. A steel manufacturing plant is spending many hours in manual inspection of their steel product(flat 2\*2 ft steel plates) The inspection is a crucial part of their delivery cycle.
3. Design and detail out a proposal to automate the process using DL
4. Please, explain what will be your major questions to client regarding the process & data
5. A particular linear process has an input (x=5) and output (y=10)
6. Create a model using numpy to solve for “y” and record your best error.
7. Repeat the above experiment with different hyper parameters like Learning Rate & activation function.
8. Record the various hyperparameters used in experiment and submit the table with data (x | y | y\_pred | error (RMSE) | LR | activation used).
9. Define the role of Learning Rate in Neural Networks and why they are important using an experiment?
10. Use an experiment like above one with LR and one without LR.
11. Explain the 3 step life cycle of Deep Learning projects with an example use case.
12. Mathematically, derive the complete process of a single perceptron from an input to output and perform the below task:
13. Explain the above in 3 phases of Feed Forward, Error Calculation, Back Propagation mathematically.
14. Explain the role and importance of each and every parameter other than x and y.
15. What are activation functions and why are they required in NN?
16. Create python functions for sigmoid, tanh, relu & softmax.