Machine Learning

Assignment

By

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PROBLEM: **A medical dataset along with its description is attached. The main idea of this data set is to prepare the algorithm of the expert-system, which will perform the presumptive diagnosis of two diseases of the urinary system. Build the above expert system using an artificial neural network using only the Numpy library and implement the following:**

1. Labels encode the different categorical features using binary identifiers [1,0].

2. Fix the number of hidden layers to just 1; use sigmoid activation for this hidden layer. Also set the number of nodes in the hidden layer to 7.

3. Perform the forward and backward pass and report the weight matrices for the first three iterations.

4. Finally train the model for 50 epochs and report the accuracy of the model on the test set.

5. Repeat the above steps for two hidden layers with 5 and 10 nodes respectively; for the two hidden layers use linear and sigmoid activation in the same order.

Collab Link:
https://colab.research.google.com/drive/1sy5kHowG7ct0Ets_j1dDcV76rXj3LjYI?usp=sharing

Steps and Results:

- First imported google drive for connecting drive with Google collab.
- Imported numpy and pandas library files .
- Then uploaded a dataset from local .
- Read datasets and names for each column name and then print datasets.
- Converted datasets formats as per my convenience and according to the model .
- Changed string format to binary format (0/1).
- Train and test data for the model.
- Created model
- Used sigmoid activation for this hidden layer.
- Performed the forward and backward pass
- Trained model for 1000 epochs

Result and Conclusion: We have model loss approximately 67% at starting . After 1000 epochs it decreases with the number of epochs . At the end, we got model loss of 43% approximately .

Github Link:

https://github.com/Error404m/MLAssignment/