MACHINE LEARNING PROJECT

GROUP
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About the Project

Use Neural Network models ,in the context of weather or NASA certified asteroids that are classified as the Near Earth Objects are hazards or not

The main purpose is to train different architecture of neural network to predict whether Near Earth Objects are hazards or not.

The dataset contains features such as est_diameter_min, est_diameter_max, relative_velocity,sentry_object,absolute_magnitude, etc., and the
the target variable is the hazardous, categorised into two classes: true and false. Compare the results obtained with the results generated by the own implemented model and pytorch implementation.

Model Building:

Build the MLP classifiers by identifying the number of input and output nodes required for the problem, and specifying the number of hidden layers as:
i.0 hidden layers
ii.1 hidden layer with 16 nodes
iii.1 hidden layer with 32 nodes

Results:

In case of 0 hidden layers:

	precision	recall	f1-score	support
0	0.90	1.00	0.95	16400
1	1.00	0.00	0.00	1768
accuracy			0.90	18168
macro avg	0.95	0.50	0.47	18168
weighted avg	0.91	0.90	0.86	18168

In case of 1 hidden layers with :

- precision recall f1-score support
- 0 0.90 1.00 0.95 16400
- 1 1.00 0.00 0.00 1768
- accuracy 0.90 18168
- macro avg 0.95 0.50 0.47 18168
- weighted avg 0.91 0.90 0.86 18168

In case of 1 hidden layers with 32 nodes:

- precision recall f1-score support
- 0 0.90 1.00 0.95 16400
- 1 1.00 0.00 0.00 1768
- accuracy 0.90 18168
- macro avg 0.95 0.50 0.47 18168
- weighted avg 0.91 0.90 0.86 18168