

1. What is multiclass Classification ?

Multiclass classification in deep learning involves categorizing input data into one of three or more predefined classes or categories.

Unlike binary classification, where the output is either one of two classes, multiclass classification deals with distinguishing among multiple classes.

In this task, the model receives input data, such as images, text or audio, & predicts the probability of each classes equals one & the model assigns the input to class with the highest probability.

Multi class classification finds application in various field, including image recognition, nlp tasks like sentiment analysis or topic classification & medical diagnosis, where patients may be categorized into different disease classes based on diagnostic feature.

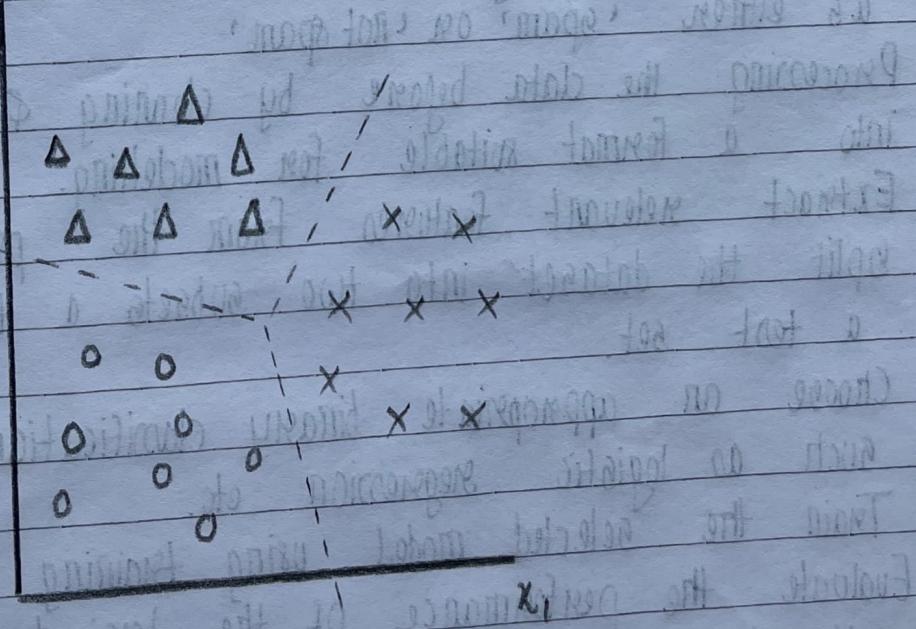
 x_2


Fig : Multiclass Classification

2. Explain Binary Classification with an example.

Ans :

Binary classification is a type of supervised learning task where the objective is to classify input data into one of two possible categories or classes.

The term "binary" refers to the fact that there are only two mutually exclusive outcomes.

Eg : Consider the task of classifying whether an email is spam or not spam. In this scenario, each email in the dataset is labelled as either "spam" or "not spam".

Goal is to build a model that can accurately predict the label (spam or not spam) of new, unseen email based on features extracted from their content.

Working :

- Collect a dataset of emails where each email is labelled as either 'spam' or 'not spam'.
- Processing the data before by clearing & transforming it into a format suitable for modelling.
- Extract relevant features from the preprocessed data.
- Split the dataset into two subsets a training set & a test set.
- Choose an appropriate binary classification algorithm such as logistic regression etc.
- Train the selected model using training data.
- Evaluate the performance of the trained model using the test set.
- Once the model has been trained & evaluated satisfactorily

it can be deployed to classify new, unseen emails as either spam or not spam in real time.

Binary classification is a fundamental task in ML where input data is categorized into one of two possible classes if findings including diagnosis It finds application in various domains, spam detection, sentiment analysis, medical & fraud detection.