**Classification – Bank Notes Workshop**

**Overview**

In this workshop, we train a neural network to classify a given banknote as either Genuine or Counterfeit.

**Data**

The dataset provided is called ‘banknotes.csv’ and consists of physical dimensions of genuine and counterfeit Swiss banknotes. There are 200 samples in the dataset; 100 are samples of Genuine banknotes and 100 are samples of Counterfeit banknotes. Source of dataset - http:// www.statistics4u.com/fundstat\_eng/data\_fluriedw.html

**Tasks**

1. Use Pandas to read in ‘banknotes.csv’.
2. Use the following columns as **features**:

* Length
* Left
* Right
* Bottom
* Top
* Diagonal

1. Use the column ‘Genuine’ as your **label**, where a value of 0 denotes a *Counterfeit* sample, and a value of 1 denotes a *Genuine* sample.

For example, with reference to the snapshot below, the sample BN100 denotes a Genuine banknote, while BN101 denotes a Counterfeit banknote.

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1. Out of the 200 samples, use only 90 Genuine and 90 Counterfeit samples for training. In other words, your training features consists of 180 rows of data (half are Genuine, the other half Counterfeit). Naturally, your training labels would then come from the selected 180 rows of data.

The remaining 20 samples (10 Genuine; 10 Counterfeit) is for testing the accuracy of your neural network.

1. Construct your neural network model and train it with 180 training samples. Then evaluate its accuracy with the remaining 20 test samples.