

*Machine Learning Bootcamp - 2020*

**Team No. 1**

**Project 1**

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**Abstract Submission**

Recent statistical records show that 12/13 of our banks have reported issues relating with counterfeited bank notes. Using the human eyes to solve the issues of counterfeiting is not an efficient method. In this project, we develop an important part of a banknote detector which can save time and cost. We create a model which instantly detects if a banknote is authentic or inauthentic using some parameters taken from a photograph.

Pictures of handwritten banknotes are taken from the industrial camera. Wavelet transformation are conducted to transform those images into grayscale. A dataset from UCI Machine Learning Repository will be converted into a csv file. In the dataset, there are four input parameters: variances, skewness, kurtosis and the entropy of the image. These features of the image will reflect the statistic patterns of the image. The output of the data is the binary value 0 and 1 which 0 stands for the image is authentic and 1 stands for the image is inauthentic.

Multiple logistic regression is the proposed technique. 80% of the dataset will be used as training set while 20% of the dataset will be used as test set. At first, we will test variables’ effect on the prediction. If the effect of a variable is not significantly different from 0, it will be ignored to save time and reduce the complication for the codes. The y-axis of probability should be converted to log scale. A line will be fitted to that data using maximum likelihood. Graphs and box plots may be used to present the predicted results.