CPSC 501 A4

Cameron Davies 30003456

`https://github.com/MegaFooby/CPSC501A4`

1 MNIST Logistic Regression

For this model, I took `MNISTStarter.py` and made a convolutional neural network by reshaping the input so it will work with the Conv2D layer, adding a couple Conv2D layers and MaxPooling2D layers, followed by flattening the data and using a couple dense layers to fit it into the proper output. I also changed the optimization function to Adam because I tried all of the optimizers and it worked the best. It also outputs the model to `MNIST.h5`.

I also used this site as a guideline. `https://www.tensorflow.org/tutorials/images/cnn`

Run it using `python3 MNISTModel.py`.

2 Logistic regression on a replacement for MNIST dataset

I started with the same model as in part 1 and it seemed to work fine with 95% accuracy. I then found a square looking B which it thought was either A, B, F, G, or H. I reduced the number of epochs and that seemed to fix it 90% of the time. It outputs the model to `notMNIST.h5` or `notMNISTModified.h5`.

Run it using `python3 notMNISTModel.py` or `python3 notMNISTModelModified.py`.

3 Build a logistic regression model to predict if someone has coronary heart disease

I manually processed the data into a 2D array, trimmed the top row and left column, changed them all to floats, normalized the values to between 0 and 1, trimmed the right column into a separate array, then split them into training and testing arrays. I put the top 90% into the training array and the remaining 10% into the testing array. For the model, I used the one from the following link and compiled it the same way as I did in the first and was getting 80% accuracy so I didn't change anything. I looked at how my model fitted the data,

and it seemed to go over just as much as under so I don't think there was any over or underfitting.

    `https://www.tensorflow.org/tutorials/load_data/csv`

    Run it using `python3 CHDModel.py`.