# NN Assignment Report

### 1 - Executive Summary

*Write your executive summary here. An executive summary is essentially a brief write-up that summarizes the complete assignment. This includes your understanding of the data and the problem statement, the approaches that you took to satisfactorily solve the problem, and the final results of the assignment.*

### 2 - Model Building

#### 2.1 - Data Description

*Write a brief description of the data here. This includes the nature of the data, the number of data points, the number of classes, the image dimensions, and so on. Feel free to include images in this section.*

#### 2.2 - Data Preparation

*Describe your data preprocessing and preparation steps here. This includes all the data processing methods you executed till the point where you began building your first model.*

#### 2.3 - Basic Model

*Describe the architecture of your basic CNN model here and report its performance on the data set. Feel free to report the performance data frame you created in your code notebook here.*

#### 2.4 - Challenges

*Describe the challenges you faced with your basic CNN model. Specifically, describe the class imbalance in the data, and whether you think it leads to overfitting in the model. Feel free to use visualizations in this section to describe the class balance more lucidly.*

### 3 - Data Augmentation and Model Optimization

#### 3.1 - Data Augmentation

*Describe your data augmentation process here. You can write about how you augmented your data set and by how much. Feel free to use count plots here to compare the data count distribution before and after augmentation.*

#### 3.2 - Basic Model

*Describe the performance of your basic model on the augmented data set here. Feel free to report the performance data frame you created in your code notebook here.*

#### 3.3 - Hyperparameter Tuning

Describe the hyperparameters you tuned the model on and the corresponding performance results here. Use the following table to report your results.

| **Model Architecture** | **Number of Trainable Parameters** | **Median Training Accuracy** | **Median Validation Accuracy** |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |

### 4 - Final Model

*Describe the structure of your final optimal model here, including its network architecture and the learning rate you used to train the model. Also, report the testing accuracy of this model.*

### 5 - Way Forward

*Write down the final insights you gained from the assignment here and what you think you could do to improve the model’s performance even further here.*