# **Summary of Experiments Done**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ModelType** | **Experiment#** | **HyperParameter** | **No. Of Trainable**  **Parameters** | **Result** | **Decision + Explanation** |
| **Conv3D** | **Experimenting with Batch Size and Number of epochs** | | | | |
| **1** | **BatchSize=600**  **#Epochs=10** |  | **Throws OOM Error during Bacth2 of 1st Epoch** | **Reduce the batch size and reduce no. of neurons in dense layer** |
| **2** | **BatchSize=100**  **#Epoch=25**  **ReduceLRFactor=0.8**  **Min\_lr=0.0001** |  | **Training Accuracy:0.38**  **Validation Accuracy:0.16** | **Highly Overfit Data.** |
| **Experimenting with #frames, image resolution ,batch size** | | | | |
| **3** | **BatchSize=30**  **#frames=16**  **#Epochs=20**  **#img(160,160)** | **13205189** | **Training Accuracy:0.28**  **Validation Accuracy:0.25** | **Overfit model and high bias.Very high training time.Need to reduce the size of the model** |
| **4** | **BatchSize=40**  **#frames=20**  **#Epochs=15**  **#img(160,160)** | **13205189** | **Training Accuracy:0.83**  **Validation Accuracy:0.15** | **Overfit model and high bias.Very high training time.Need to reduce the size of the model** |
| **5** | **BatchSize=20**  **#frames=20**  **#Epochs=25**  **#img(160,160)**  **Filter(3,3,3)**  **Denselayerneuron=256**  **Dropout=0.5** | **26372293** | **Training Accuracy:0.41**  **Validation Accuracy:0.39** | **Need to reduce the size of the model** |
| **6** | **BatchSize=30**  **#frames=16**  **#Epochs=30**  **#img(120,120)**  **Filter(2,2,2)**  **Denselayerneuron=128**  **Dropout=0.5** | **7477717** | **Training Accuracy:0.39**  **Validation Accuracy:0.27** | **High Bias. Will try with larger filter** |
|  | **BatchSize=10**  **#frames=10**  **#Epochs=30**  **#img(120,120)**  **Filter(3,3,3)**  **Denselayerneuron=128**  **Dropout=0.5** | **3792229** | **Training Accuracy:0.48**  **Validation Accuracy:0.55** | **Need to increase the batch size and num of epochs** |
| **7** | **BatchSize=50**  **#frames=10**  **#Epochs=50**  **#img(120,120)** | **3783525** | **Training Accuracy:0.96**  **Validation Accuracy:0.84**  **Val\_loss=0.49** | **Good Model.The second best.** |
|  | **Adding more convolutional layers** | | | | |
| **Conv2D+GRU** | **8** | **BatchSize=10**  **#frames=10**  **#Epochs=30**  **#img(120,120)** | **418901** | **Training Accuracy:0.33**  **Validation Accuracy:0.23**  **Val\_loss=3.82** | **Not a good model.Need to experiment with more GRU layers** |
| **Conv2D+LSTM** | **9** | **BatchSize=10**  **#frames=10**  **#Epochs=30**  **#img(120,120)** | **3148933** | **Training Accuracy:0.81**  **Validation Accuracy:0.80**  **Val\_loss=0.5563** | **Optimum tuning has been done** |
| **Final Model** | **MobileNet+LSTM** | **BatchSize=10**  **#frames=10**  **#Epochs=30**  **#img(120,120)** | **297733** | **Training Accuracy:0.95**  **Validation Accuracy:0.87**  **Val\_Loss=0.46** | **Best model in terms of accuracy, val\_loss and no. of parameters** |