# Finding of Neural\_Networks\_Project\_Yasmeen\_Minal

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| **Experiment Number** | **Model** | | **Hyper-parameters** | | | | | **Total Parameters** | **Best**  **Training Accuracy** | **Best**  **Validation**  **Accuracy** | **Result** | **Decision + Explanation** |
| **Name** | **TYPE** | **Number Videos (train,val)** | **Image**  **Size** | **Frames to Sample** | **Batch Size** | **Epochs** |
| **1** | **conv\_3d\_model1** | **Conv3D** | **663,100** |  | **30** | **30** | **3** | 1736389 |  |  | Getting: ResourceExhaustedError: OOM when allocating tensor with shape[30,30,160,160,16] | **Getting Out of memory error,**  **Reducing the sample size of videos** |
|  | Model\_init\_2020-11-0212\_42\_44.794598 | **Conv3D**  **(4 conv3d layers,**  **2 dense layer)** | **10,10** | **(160,160)** | **30** | **10** | **1** | 1736389 | **.1** | **.3** | **Result are not convincing,** | **Reduce the size of the image, increase epocs see if accuracy increases with learning** |
|  | Model\_init\_2020-11-0212\_43\_17 | **Conv3D** | **10,10** | **(100,100)** | **30** | **10** | **2** | 687813 | **.2** | **.2** | **Accuracy: 0.21** | **Increasing, no of epoc, decreasing number of frame 16,to train better** |
|  | Model\_init\_2020-11-0212\_43\_39.184487 | **Conv3D** | **10,10** | **(100,100)** | **16** | **3** | **2** | 687813 | **.33** | **.33** | **Accuracy hardly increased by .11** | **Accuracy is not got good will verify effect of batch\_size keeping image size (100,100)** |
|  | Model\_init\_2020-11-0212\_44\_06.003719 | **Conv3D** | **10,10** | **100,100** | **16** | **5** | **2** | 687813 | **.3** | **.1** | **Looks like model is overfitting** | **Reducing filter (2,2,2)**  **And increasing image size 120,120** |
| **2** | Model\_Filter2\_120\_2020-11-0212\_45\_35.493623 | **Conv3D**  **(filter (2,2,2)** | **10,10** | **120,120** | **16** | **5** | **10** | 1762613 | **.4** | **.28** | **Not satisfactory results** | **Will use dropout(0.25) to convolutional layer with(2,2,2)filter, augmenting image by 30 degrees** |
| **3** | Model\_3\_AugData\_2020-11-0212\_46\_03.787951 | **Conv3D**  **(filter (2,2,2), augment)** | **10,10** | **120,120** | **16** | **5** | **8** | 2556533 | **.4** | **.2** | **Number parameters have increased , not much changes in accuracy** | **Increasing epocs 20, batchsize to 10** |
|  | Model\_init\_2020-11-0212\_46\_49.853001 |  | **10,10** | **120,120** | **16** | **10** | **20** | 504709 | **.35** | **.4** | **Parameters reduced , though the accuracy has increased, it is inconsistency with epoc** | **Using LSTM, with Conv2D did not get satisfactory results** |
| **4** | Model\_3dCNN\_LSTM\_2020-11-0212\_48\_01.376567 | **Conv2D+LSTM** | **10,10** | **120,120** | **18** | **5** | **5** | 1657445 | **.4** | **.4** | **Accuracy: 0.4** | **Will check if model learns better by increasing data size** |
|  | Model\_2dCNN\_LSTM\_2020-11-0212\_53\_48.614295 |  | **663,100** | **120,120** | **18** | **5** | **5** | 1657445 | **.52** | **.46** | **Accuracy .46** | **Increasing epocs, for better learning** |
|  | Model\_2dCNN\_LSTM\_2020-11-0213\_09\_31.614538 |  | **663,100** | **120,120** | **18** | **10** | **20** | 1657445 | **.90** | **.76** | **Accuracy .76** | **Preprocessing by Cropping image height and width by 1/6 percentage** |
| **Final Model** | Model\_2dCNN\_LSTM\_2020-11-0214\_41\_33.555458 |  | **663,100** | **120,120** | **18** | **10** | **20** | 1657445 | **.90** | **.78** | **Accuracy of .78 Loss = .63** | **…………………** |

**Conclusion:**

* We will crop image height by 16% from top, width 16% from left
* Using consistent image of 120,120
* Normalize the image to build model to avoid the possibility of exploding gradients