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| --- | --- | --- | --- | --- |
| **Experiment Number** | **Model** | **Result** | **Decision + Explanation** | **No of parameters** |
| **1** | **Conv3D** | **Throws OOM(Out Of Memory error)** | **Reduced the batch size from 64 to 42(optimized for the processor)** |  |
| **2** | **Conv3D** | **Train\_acc : 0.9954**  **Val\_acc : 0.7400**  **Overfitting in the model.** | **Include Batch normalization and Dropout layers to avoid overfitting.** | **1,929,253** |
| **3** | **Conv3D** | **Train\_acc : 0.90**  **Val\_acc : 0.78**  **Reduction in overfitting problem.** | **Too much oscillation in validation loss, thus need to reduce the learning rate.** | **1,929,509** |
| **4** | **Conv3D** | **Train\_acc : 0.96**  **Val\_acc : 0.78**  **No improvement in validation accuracy in the model after reducing the learning rate.** | **We need to reduce some layers to reduce overfitting problem.** | **1,929,509** |
| **5** | **Conv3D** | **Train\_acc : 0.89**  **Val\_acc : 0.75**  **Got rid of overfitting.** | **Checking the model with all the 30 instances of the sequence, instead of indexing some instances.** | **842,253** |
| **6** | **Conv3D** | **Train\_acc : 0.72**  **Val\_acc : 0.62**  **No improvement in the model** | **Checking the model performance with different optimizer(SGD)** | **2,453,797** |
| **7** | **Conv3D** | **Train\_acc : 0.69**  **Val\_acc : 0.71**  **No improvement in the model** | **Increasing number of neurons in the layer to improve the performance of the model** | **2,453,797** |
| **8** | **Conv3D** | **Train\_acc: 0.74**  **Val\_acc:0.31**  **Model become overfit.** | **Decreasing number of layers in the network** | **4,829,349** |
| **9** | **Conv3D** | **Train\_acc: 0.68**  **Val\_acc: 0.58**  **Model performance degraded.** | **Low performance of the model, Need to tune the hyperparmeters.** | **4,829,349** |
| **10** | **Conv2D +**  **GRU** | **Train\_acc : 0.81**  **Val\_acc : 0.45** | **The model is highly overfitted.** | **439,525** |
| **11** | **Conv2D +**  **LSTM** | **Train\_acc : 0.61**  **Val\_acc : 0.52** | **Not better than Conv3D models. Need to tune the hyperparmeters.** | **1,153,125** |

* Among all the models, the best model is model 2 (Experiment number 3) which gives Training accuracy of 0.90 and validation accuracy of 0.78.