**Model Overview:**

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| --- | --- | --- | --- |
| **Experiment Number** | **Model** | **Result** | **Decision + Explanation** |
| **Model 1**  **ModelConv3D1** | **Conv3D** | **Validation accuracy: 76**  **Training accuracy: 98** | **Model is overfitting so we need data augmentation** |
| **Model 2**  **ModelConv3D1** | **Conv3D** | **Validation accuracy: 82**  **Training accuracy: 89** | **Model is not overfitting, next trying to reduce image size and resolution** |
| **Model 3**  **ModelConv3D3** | **Conv3D** | **Validation accuracy: 76**  **Training accuracy: 77** | **Model is not overfitting, let’s try to add more layers** |
| **Model 4**  **ModelConv3D4** | **Conv3D** | **Validation accuracy: 78**  **Training accuracy: 89** | **Not much improvement, let’s try adding dropout and convolution layer** |
| **Model 5**  **ModelConv3D5** | **Conv3D** | **Validation accuracy: 41**  **Training accuracy: 84** | **Adding dropout has further reduced val accuracy. Let’s try to reduce the model size and see performance** |
| **Model 6**  **ModelConv3D6** | **Conv3D** | **Validation accuracy: 73**  **Training accuracy: 91** | **Val accuracy is 73 let’s reduce parameters** |
| **Model 7**  **ModelConv3D7** | **Conv3D** | **Validation accuracy: 69**  **Training accuracy: 88** | **Val accuracy is 73 let’s reduce parameters** |
| **Model 8**  **ModelConv3D8** | **Conv3D** | **Validation accuracy: 69**  **Training accuracy: 72** | **accuracy further reduced , let’s try CNN LSTM next** |
| **Model 9**  **RNNCNN1** | **CNN LSTM Mpodel** | **Validation accuracy: 80**  **Training accuracy: 94** | **Best validation accuracy is 80%, let’s augment the data** |
| **Model 10**  **ModelConv3D10** | **Conv3D** | **Validation accuracy: 82**  **Training accuracy: 91** | **Not Overfitting hence adding more layer next** |
| **Model 11**  **ModelConv3D11** | **Conv3D** | **Validation accuracy: 76**  **Training accuracy: 79** | **Not Overfitting hence adding more layer next** |
| **Model 12**  **ModelConv3D12** | **Conv3D** | **Validation accuracy: 79**  **Training accuracy: 82** | **Not much improvement, adding dropout** |
| **Model 13**  **ModelConv3D13** | **Conv3D** | **Validation accuracy: 28**  **Training accuracy: 75** | **Performance down , reducing network parameter** |
| **Model 14**  **ModelConv3D14** | **Conv3D** | **Validation accuracy: 72**  **Training accuracy: 77** | **Let’s further reduce parameter** |
| **Model 15**  **ModelConv3D15** | **Conv3D** | **Validation accuracy: 82**  **Training accuracy: 84** | **Good performance, let’s further reduce parameter** |
| **Model 16**  **ModelConv3D16** |  | **Validation accuracy: 67**  **Training accuracy: 75** | **Performance is down** |
| **Model 17**  **RNNCNN2** | **CNN LSTM with GRU** | **Validation accuracy: 83**  **Training accuracy: 99** | **Model is overfitting, applying transfer learning next** |
| **Model 18**  **RNNCNN\_TL** | **Transfer learning** | **Validation accuracy: 53**  **Training accuracy: 83** | **Validation accuracy is down** |
| **Model 19**  **RNNCNN\_TL2** | **Transfer learning with GRU** | **Validation accuracy: 73**  **Training accuracy: 99** | **In terms of accuracy this is best with more number of paramater** |
| **Final Model** |  | **………….** | **…………………** |

##### **Final Model** ***Since Model 15 has a smaller number of parameter and has good Accuracy across training and validation data, we are picking model 15 for evaluation.***