Experimented with couple of models starting from Conv3D model 🡪 Conv2D + GRU 🡪 Conv2D + LSTM models.

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| **Experiment Number** | **Model** | **Result** | **Decision + Explanation** |
| **1** | Conv3D – Base Model with few layers.  Batch size = 32  Epoch = 15 | Model not giving good accuracy.  Validation Accuracy: 0.18  Training Accuracy: 0.21 | Observing that accuracy doesn’t go beyond 21%, we can add more layers to the model. |
| **2** | Conv3D – Adding more layers to the base model.  Batch size = 32  Epoch = 15 | Validation Accuracy: 0.35  Training Accuracy: 0.72 | Validation accuracy not stable. |
| **3** | Conv3D - Adding more layers to the base model - Increasing batch size & epoch.  Batch size = 64  Epoch = 30 | Validation Accuracy: 0.66  Training Accuracy: 0.74 | Model gives good accuracy, but it doesn’t seem to be a stable model as we can see from accuracy vs epoch chart. It also seems to overfit a bit. Use lesser batch size for next model. |
| **4** | Time Distributed Conv2D + GRU.  Batch size = 32  Epoch = 15 | Validation Accuracy: 0.44  Training Accuracy: 0.86 | Model seems to overfit with GRU. |
| **5** | Time Distributed + ConvLSTM2D.  Batch size = 32  Epoch = 15 | Validation Accuracy: 0.60  Training Accuracy: 0.47 | Training accuracy seems lower, let us try to train with additional layers. |
| **6** | Time Distributed + ConvLSTM2D with additional layers.  Batch size = 32  Epoch = 15 | Validation Accuracy: 0.55  Training Accuracy: 0.53 | Both validation & training accuracy seems stable, let us try to increase number of epochs to get better accuracy. |
| **7 – Final Model** | Time Distributed + ConvLSTM2D with additional layers - Increasing Epochs.  Batch size = 32  Epoch = 30 | Validation Accuracy: 0.69  Training Accuracy: 0.77 | As we increased the number of epochs, we can see improved accuracy. Although this model can be further fine-tuned to attain similar train & validation accuracy. |

For other models like ConvGRU and Conv3D, there is lot of difference between training accuracy and validation accuracy which indicates overfitting, hence we are not choosing these models.