|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Experiment Number** | **Model** | **Epochs / Batch Size** | **Corresponding Training accuracy** | **Highest Validation Accuracy** | **Observations** |
| **A** | **Conv3D** | **10/30** | **0.4577** | **0.5100** | **Model is underfitting** |
| **B** | **Conv3D** | **10/30** | **0.1841** | **0.1600** | **Changing the activation function didn’t increase the accuracy** |
| **C** | **Conv3D** | **20/30** | **0.3980** | **0.4300** | **After reducing the drop out to 0.25, and changing the frame size and layers, the accuracy for validation and training data are at ~43%** |
| **D** | **Conv3D** | **20/30** | **0.2438** | **0.3600** | **After reducing batch size = 5 the accuracy dropped drastically for both training and validation data** |
| **E** | **Conv3D** | **30/30** | **0.6169** | **0.7700** | **Applying Max Pooling for each Convolution layer increased the overall accuracy but model can still perform better** |
| **F** | **Conv3D** | **5/20** | **0.7836** | **0.8250** | **Applying data Augmentation,**  **Affine Transformation model is performing better** |
| **G** | **Conv3D** | **10/20** | **0.8284** | **0.8250** | **Input and Output layers:**  **-One Input layer with dimensions 30, 120, 120, 3**  **- Output layer with dimensions 5**  **Convolutions:**  **- Apply 4 Convolutional layer with increasing order of filter size (standard size: 8, 16, 32, 64) and fixed kernel size = (3, 3, 3)**  **- Apply 4 Max Pooling layers, after each convolutional layer.**    **MLP (Multi-Layer Perceptron) architecture:**    **- Batch normalization on convolutional architecture**  **- Dense layers with 2 layers followed by dropout to avoid overfitting** |
| **H** | **Conv3D** | **10/20** | **0.8905** | **0.8050** | **Changing the dropout to 0.5 without changing the parameters of model G didn’t make accuracy better** |

Model 7 (Model G) gave us **train accuracy of 82% and validation accuracy of 82%** using all the 30 frames. The same model is submitted for the review. While we did try model lesser frames by using even frames but we felt more comfortable using full frame. Cropping and other preprocessing also did not affect much on the final accuracy.

Link For final model h5 file

<https://drive.google.com/drive/folders/1lUa6cJa7r-TQkv9bKiupLfbqBjymQDPk?usp=sharing>