Explanation

We opt to model the data using Conv3D. To start with the experiment we choose a batch size of 51 (same as no. of frames in each video) and select a list of image numbers that we want to use for a particular video. With the subsequent experiments we will choose to reduce the batch size according to the previous experiment results. Below is the list of the observations:-

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| **Experiment Number** | **Model** | **Result** | **Decision + Explanation** |
| **1** | **Conv3D** | **We started with the batch size of 51 and 15 epochs and checked the categorical accuracy of both the training and validation datasets.** | **Decision: To change batch size to 30 and number of epochs to 10.**  **Explanation: Validation accuracy was significantly lesser than Training accuracy, hence indicating an overfit model.** |
| **2** | **Conv3D** | **With batch size =30, epoch =10,**  **we repeat the same steps by calling the generator function and then tried to fit the model.** | **Decision: Batch size is changed to 16, and epoch =70**  **Explanation: Training - Validation accuracy difference has reduced a lot this time yet the model overfit.** |
| **3** | **Conv3D** | **With batch size =70, epoch =10,**  **we repeat the same steps by calling the generator function and then tried to fit the model.**  **Accuracy of training data = 0.65**  **Validation accuracy = 0.42** | **Decision: We are adding another layer in the architecture with same epoch and batch size.**  **Explanation: This is clearly an overfit model with low accuracy.** |
| **4** | **Conv3D** | **Accuracy of training data = 0.77**  **Validation accuracy = 0.47** | **Decision: We added optimizer as SGD , save\_freq='epoch' and save\_best\_only=True, keeping the batch size and epoch constant.**  **Explanation: This overfit model has low accuracy as the previous experiment.** |
| **Final Model** | **Conv3D** | **Training Accuracy = 0.86**  **Validation Accuracy = 0.60** | **Conclusion: After observing different values ,we came to a conclusion that this is the final model with significantly high accuracy as compared to previous models.** |