**Context:** Due to limited resources, I’ve trained the model 1-5 for 5 epochs and remaining for 8 epochs.

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| **Experiment Number** | **Model** | **Result** | **Decision + Explanation** |
| 1 | Model with 3 Conv3d + Batch Normalization + Pooling layers | * categorical\_accuracy: 0.3092 * val\_categorical\_accuracy: 0.2000 * Overfitting, very low and fluctuating validation accuracy. | Increase layers to extract more features. |
| 2 | Increasing Layer Set on Experiment 1 | * categorical\_accuracy: 0.2443 * val\_categorical\_accuracy: 0.2400 * Number of parameters dropped sharply. | Use more Kernels in dense layer of this model |
| 3 | Increasing Dense Layer Kernels on Experiment 2 | * categorical\_accuracy: 0.2941 * val\_categorical\_accuracy: 0.4400 * Both validation and training accuracies are increasing steadily and the losses are also decreasing steadily. Also unlike Experiment 1, the number of parameters are much lower as well. | Model is not able to converge in 5 (low) epochs so we shall try increasing speed with increasing batch size. |
| 4 | Increasing batch size on Experiment 3 | * categorical\_accuracy: 0.4344 * val\_categorical\_accuracy: 0.5200 * The training and validation accuracies both struggle in the beginning but start to increase very slowly later. | We shall try increasing the learning rate as well and check if the model starts performing better |
| 5 | Increasing learning rate on Experiment 4 | * categorical\_accuracy: 0.5143 * val\_categorical\_accuracy: 0.5600 * Increasing learning rate did not help acheieve the desired output. The model now overfits a lot. | We shall try to increase the number of epochs of model and bring down the batch size to 32 and see if it is a better one |
| 6 | Increasing epochs to 8 on Experiment 3 | * categorical\_accuracy: 0.3756 * val\_categorical\_accuracy: 0.4000 * Both training and validation accuracy has reduced | Still not getting desired out put we will change the architecture for experimentation |
| 7 | CNN+RNN with MobileNetV2 Transfer Learning + GRU layers | * categorical\_accuracy: 0.8462 * val\_categorical\_accuracy: 0.6700 * Model is overfitting | So we shall try adding dropout layer to mobilenetv2. |
| 8 | Decreasing the number of output neurons from MobileNet on Experiment 7 | * categorical\_accuracy: 0.7783 * val\_categorical\_accuracy: 0.5200 * The model is still overfitting and there has been no improvement. | We will now try combining multiple changes with some increase in parameters and some decrease. Also we shall tweak optimser as well |
| 9 | Decreasing batch size and learning rate, increasing GRU Kernels | * categorical\_accuracy: 0.7677 * val\_categorical\_accuracy: 0.6200 * The model has a high tendency of overfitting. Adding dropouts and the learning rate reduction didnt help much | There is not much improvement. |

**Conclusion**: Increase the number of epochs and till the model converges. As of now the model doesn’t converge and not in a shape to be used in production.