# Gesture Recognition- Writeup

| **Model Name** | **Model Type** | **No of parameters** | **Augment Data** | **Validation accuracy** | **Training accuracy** | **Observations** |
| --- | --- | --- | --- | --- | --- | --- |
| conv\_3d1\_model | Conv 3D | 1,117,061 | No | 20% | 96% | The base model is over-fitting. Let’s Augment data using cropping in next model |
| conv\_3d2\_model | Conv 3D | 3,638,981 | Yes | 86% | 86% | The model is not over-fitting. Next, we will reduce the parameter size. Moreover, since we see minor oscillations in loss, let's try lowering the learning rate to 0.0002 |
| conv\_3d3\_model | Conv 3D | 1,762,613 | Yes | 73% | 75% | The model has stable results. Also, we were able to reduce the parameter size by half. Let's try adding more layers at the same level of abstraction |
| conv\_3d4\_model | Conv 3D | 2,556,533 | Yes | 82% | 81% | With more layers, we notice a decent performance improvement. We get the best validation accuracy of 82%. Let's try adding dropouts at the convolution layers |
| conv\_3d5\_model | Conv 3D | 2,556,533 | Yes | 64% | 83% | Adding dropouts has further reduced validation accuracy as it's not able to learn generalisable features and further overfitting. Let’s reduce the number of parameters in the next model to reduce the memory footprint of the model. |
| conv\_3d6\_model | Conv 3D | 696,645 | Yes | 77% | 82% | Reducing the number of network parameters by reducing image resolution/ filter size and dense layer neurons. Comparably good validation accuracy |

**Conclusion:**

Thus, with the experiments that we conducted above, we can conclude that the best validation accuracy was achieved using the conv3d4 model with a validation accuracy of 82% with relatively fewer parameters compared to the conv3d2 model, wherein the validation accuracy of 86% was achieved however, the number of parameters in that model were pretty high. We also experimented by reducing the number of parameters in conv3d6 model and we were able to achieve a validation accuracy of 77% with a significant reduction in the number of parameters.