**Gesture Recognition**

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| **Experiment Number** | **Model** | **Result** | **Decision + Explanation** |
| **1** | **Conv3D** | **Throws Generator error** | **Crop the images correctly, try to overfit on less amount of data** |
| **2** | **Conv3D** | **Model not trainable as a lot of parameters** | **Reduce the size of the image/Reduce the number of layers. Memory limit for training the model exceeded.** |
| **3** | **Conv3D** | **Accuracy: 0.21** | **Increase the amount of trainable data/ reduce the filter size.** |
| **4** | **Conv3D** | **Accuracy: 0.32** | **Reduce Cropping. Built an 84x84 image** |
| **5** | **Conv3D** | **Model network shape invalid** | **Accidentally, used the dimensions of image that is used before cropping in the network. Hence the error occurred and rectified to 84x84.** |
| **6** | **Conv 3D** | **Accuracy: 0.73** | **Tried Conv3D with batch size as 10 and number of epochs as 30.** |
| **7** | **GRU** | **Accuracy: 0.43** | **Used VGG16 ImageNet with GRU with Batch size as 20.**  **Yet, not gave good accuracy. So, switched back to Conv3D.** |
| **Final Model** | **Conv3D** | **Accuracy: 0.82** | **To find, optimal batch size, tried Conv3D with batch size as 20 and number of epochs as 30.** |

**Conclusions**

* To conclude, a smaller mini-**batch size** (not too small) usually leads not only to a smaller number of iterations of a **training** algorithm, than a large **batch size**, but also to a higher accuracy overall, i.e, a neural network that performs better, in the same amount of **training** time, or less. Here we find the optimal batch size as 20. Whereas batch size 10 is too small and also need more time for training.
* **GRU** is better than **LSTM** as it is easy to modify **and** doesn't need memory units, therefore, faster to train than **LSTM** and give as per performance.
* Conv3D gives better accuracy when compared with LSTM/GRU models
* **We can select the Conv3D model with 82% accuracy as our final model for Gesture Recognition.**