1. Do you get the same results if you run the Notebook multiple times without changing any parameters?

Answer: No, we won’t get the exact same result even without changing any parameters because within the framework itself there is randomization and the kernel initialization is also randomized. To prevent this a “seed” can be set so as to reproduce the same results.

1. What is the effect of adding more neurons to each Conv2D layer?

Answer: Generally, adding more neurons to the Conv2D layers will improve the accuracy of the AI model as the model we will be able to extract more features but after a certain threshold the accuracy will deteriorate as model will overfit on the training data.

1. What happens if we manipulate the value of Dropout?

Answer: Dropout is added to the model layers as a regularization technique, to prevent overfitting, but if the dropout value is exceeds a threshold then the model will start to underfit and the accuracy will deteriorate.

1. What is the effect of adding more Hidden layers to the network?

Answer: Generally, adding more hidden layers to the network will improve the accuracy of the AI model as the model we will be able to extract more features but after a certain threshold the accuracy will deteriorate as model will overfit on the training data.

1. What is the accuracy score if we use RMSprop for model 6 ?

Answer: After using the RMSprop the accuracy boosted a bit from 98.26% 🡪 98.58% in test dataset, but contrary to the metrics the model with RMSprop is overfitting than the model with Adam optimizer.

1. Does manipulating the learning rate affect the model? Justify your answer.

Answer: Yes, manipulating the learning rate will affect the model. Generally, the model with high learning rate will underfit as the model will get stuck in some indefinite loop (divergent behaviour) without reaching the global minima, and model with low learning rate will tend to overfit because due to the extremely slow weights updates and high chances of getting stuck in local minima.

1. What is the best parameter configuration for this project ?

Answer: The best parameter configuration:

Batch size: 64

Epochs: 30

Optimizer: Adam

Learning rate: 0.001