CM2

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1 [CM2] COVID Dataset

1.1 Citical Code Blocks of Models

The critical code blocks of the models are as belows:

1. Loss Function:

- Typically, with neural networks, we seek to minimize the error. As such, the objective function is often referred to as a cost function or a loss function and the value calculated by the loss function is referred to as simply "loss."

- We have used **sparse_categorical_crossentropy** in all the models because this is used function when there are two or more label classes as integers and we have converted to labels using one hot encoding process.

2. Optimizer: - The process to take the loss and try to minimize it, because a lower loss means our model is going to perform better is called optimizer.

- We have compared performace of adam optimizer and sgd optimizer and recorded the output curves in the pdf attached along with the assginment. All the three models gave best performance when **Adam optimizer** was used.

3. Learning Rate: - The steps are optimizer takes into the direction of the local minimum are determined by the learning rate.And to reach the local minimum we must set the learning rate to an appropriate value, which is neither too low nor too high.

- We tried 3 different values 0.1,0.01 and 0.001 of learning rates and the best performance wa obtained when adam optimizer learning rate was set to **0.001** for all the 3 models.

4. Activation Function:

- An activation function in a neural network defines how the weighted sum of the input is transformed into an output from a node or nodes in a layer of the network.

- **Relu,** because it is less susceptible to vanishing gradients that prevent deep models from being trained.The last layer has softmax activation function becasue it is used to normalize the outputs, converting them from weighted sum values into probabilities that sum to one.

1.2 References

- https://machinelearningmastery.com/loss-and-loss-functions-for-training-deep-learning-neural-networks/#:~:text=Neural%20networks%20are%20trained%20using%20an%20optimization%20proce