ISI DS Challenge

CRL Team

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1 DenseNet

DenseNet(Deep Neural Network)is a deep learning model, that helps the deep neural network to go deeper, making them more accurate for training purposes with the help of shorter connections between the layers. At first, there is a convolution layer and a transition layer, then there comes a dense block followed by a transition layer and this combination of dense block and transition layer goes on, lastly there is a dense layer followed by a classification layer.

(a) Convolution Block: After the input, every convolution block has a sequence of BatchNormalization, followed by ReLU activation and then the main Conv2D layer.

(b) Dense Block: Every dense block consists of two convolutions. Each convolution has 4*number of filters.

(c) Transition Layer: In the transition layer the number of channels gets reduced.

We stack the dense blocks and transition layers together. At the end we add a GlobalAveragePooling layer and after the final output layer. The diagram of the DenseNet architecture is provided in Figure 1.

2 Implementation and Results

We run our code in google colab with keras environment. The batch size is set to 16 and the number of epochs as 60. The best training accuracy we get 99.89% and the corresponding maximum cross validation accuracy is 74.20%.
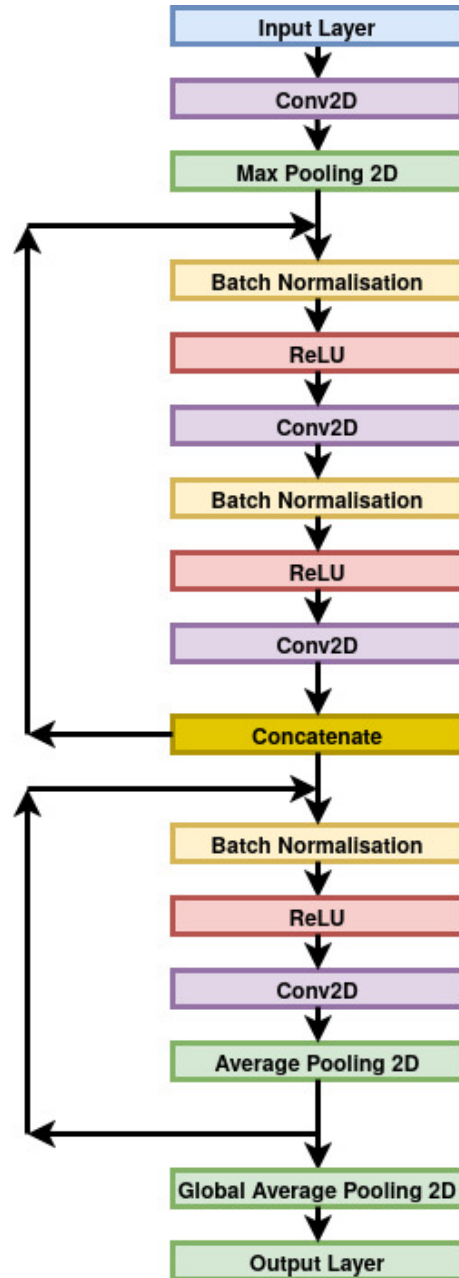
Figure 1: Model Architecture