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Advanced Artificial Intelligence – Assignment 5

Architecture Model's Report

We have tried to combine different number of layers with different number of neurons with different activation functions which could help us in extracting the model with the best accuracy. Please find the different architectures used here.

Architecture 1-

The architecture 1 model consists of only two layers an input and an output layer. The number of neurons in the input layer is 512 and output layer is 10 as it has to be equivalent to the number of classes to which the data has to be segregated. This is the simplest model and has relu and softmax layer as the activation layers.

The relu layer is responsible for removing the negative values out of the input so is considered as an important layer in achieving a good accuracy of the data by removing the invalid values, the other function used is softmax function. The more the number of functions used could increase the accuracy of the model to some extent.. The accuracy achieved by this model is 98.11%.

Architecture 2-

The architecture 2 model consists of one more layer as hidden layer (512 units) which is using tanh function as the activation function. So, the activation functions used in this model are relu, tanh and softmax function. Thus increasing the complexity of the program and trying to evaluate the output with more precision.

The accuracy achieved by this model is 97.79%.

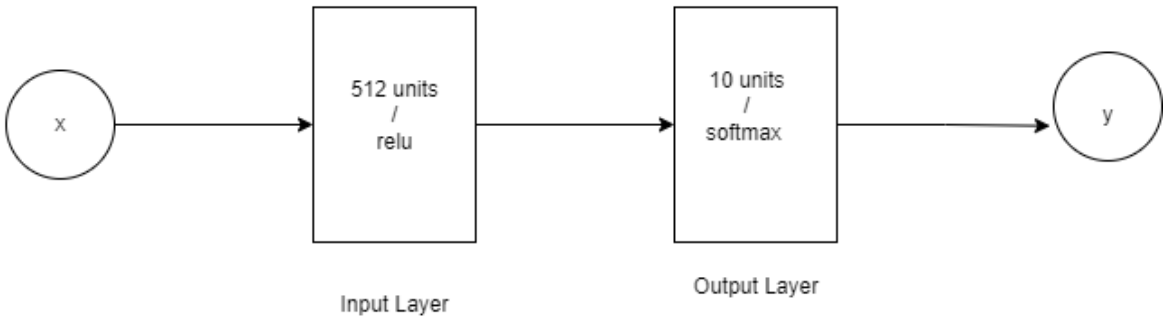
Architecture 3-

The third model contains one more hidden layer (512 units) in addition to the previous one which is using sigmoid function as the activation function. This layer thereby, increases the complexity of the model furthermore and computes the results by applying 4 activation functions which are relu, tanh, sigmoid and softmax.

The accuracy achieved by this model is 98.05%.

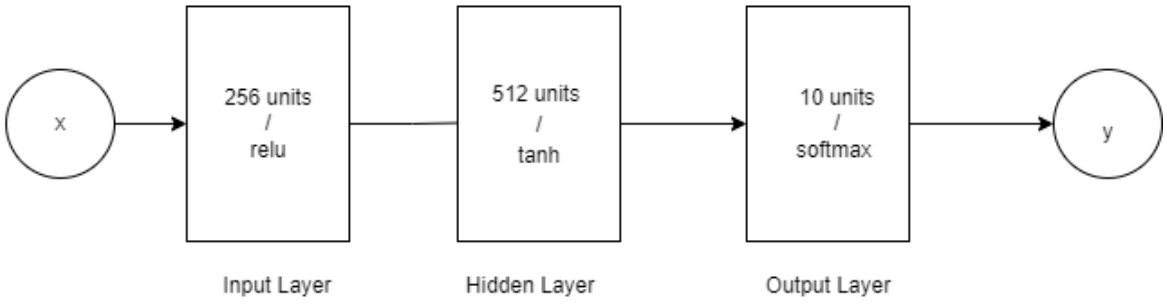
Please find the architecture diagram for the mentioned models below-

Test Accuracy = 98.11%



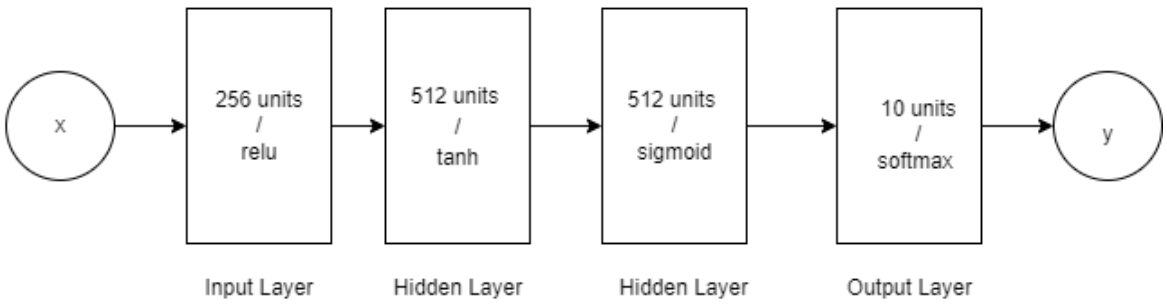
Architecture 1

Test Accuracy = 97.79%



Architecture 2

Test Accuracy = 98.05%



Architecture 3