Deep Learning Project 1 Report

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Objective

This project is a simple task of classifying numbers based on divisibility of 3 and 5
Two approaches were asked to implement:
1) (Software 1.0) The program based approach where just dividing the numbers by 3 and 5 will provide the classification label.
2) (Software 2.0) Deep neural network model using python and various available frameworks
Classification is as follow:
If divisible by 3 its "fizz"
If divisible by 5 its "buzz"
If divisible by 3 5 its "fizzbuzz"
else nothing

0.1 Framework

Used tensorflow.keras API for creating and training model version(2.0.0)

Experiments

Software 1.0

Written simple python program to check divisibility and classify the numbers.

Software 2.0

0.1.1 Training Data and pre-processing

Numbers from 101 to 1000 were used for training. Numebers were converted into 16 sized array which contained that numbers binary representation.
Labels for classes were generated as one hot vector.

0.1.2 Model:

Input layer Size : 16
Hidden Layer : 2 layer with 256 neuron in each layer
Output Layer Size : 4
Activation Functions : Relu in hidden layers and softmax at output layer.
optimizer : Adam
Loss function : Categorical Cross entropy

Trying different hyper-parameters gave a lot of insight in how NN works. Larger models will not necessarily give best results.

Results

Software 1.0

Test Accuracy:: 100 %

Software 2.0

Test Accuracy:: 97 %