REPORT

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1. Following are the neural nets used with corresponding training and validation accuracy. Data_batch_1-4 are used as training data and Data_batch_5 is used as test data. Each model is ran for 100 epochs or less if it converges.
    a.
        i. Layers are as followed:
            1. Conv2D(32,(3,3))
            2. Conv2D(64,(3,3))
            3. Conv2D(64,(3,3))
            4. MaxPooling2D(pool_size=(2,2))
            5. Dense(512)
            6. Dense(256)
            7. Dense(10)
        ii. Validation Accuracy: 64.16
    b.
        i. Layers are as followed:
            1. Conv2D(32,(3,3))
            2. Conv2D(64,(3,3))
            3. Conv2D(64,(3,3))
            4. Maxpooling2D(pool_size=(3,3))
            5. Dense(512)
            6. Dense(512)
            7. Dense(256)
            8. Dense(10)
        ii. Validation Accuracy: 65.15
    c.
        i. Layers are as followed:
            1. Conv2D(32,(3,3))
            2. Conv2D(32,(3,3))
            3. Maxpooling2D(pool_size=(2,2))
            4. Conv2D(64,(3,3))
            5. Conv2D(64,(3,3))
            6. Maxpooling2D(pool_size=(2,2))
            7. Dense(512)
            8. Dense(10)
        ii. Validation Accuracy: 66.48
2. After including batch normalization and dropout together in Model(c) from part 1, We get following accuracies:
    a.

i. Layers are as followed:
    1. Conv2D(32,(3,3))
    2. Conv2D(32,(3,3))
    3. Maxpooling2D(pool_size=(2,2))
    4. Conv2D(64,(3,3))
    5. Conv2D(64,(3,3))
    6. Maxpooling2D(pool_size=(2,2))
    7. Dense(512)
    8. Dense(10)
ii. Validation Accuracy: 81.75

3. Clearly, model(c) with normalisation is the best and hence I ran it with different activation functions:
    a. ‘Relu’: 81.72
    b. ‘Sigmoid’: 51.06
    c. ‘Tanh’: 10.03
    d. ‘Elu’: 79.02
    e. ‘LeakyReLu’: 82.37