Mid Term Report

Computer Vision And Pattern Recognition

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Section: A

Abstract:

Convolution natural network architecture commonly applied analyze visual imagery.It can be used to classify a certain image through a big dtaset.In this case MNIST dataset were used which contain handwritten number from one to nine. The goal of this project is to implement CNN classify the MNIST dataset with over 98% accueacy. In the sequential model some functions like convo2d, maxpoling,flatten,padding,dropout was used to achieve 98% accuracy.

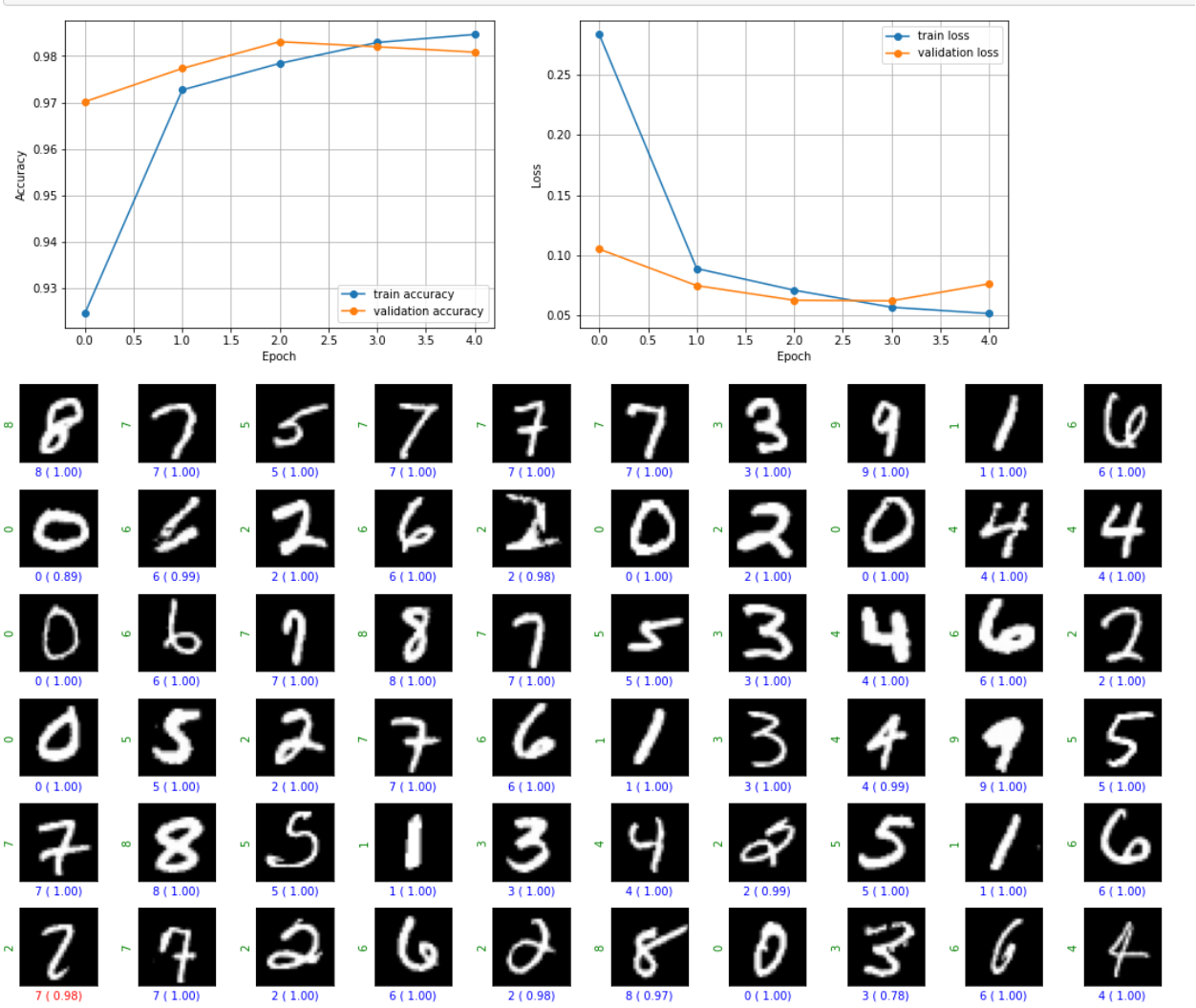
Introduction:

Optimizers are techniques or approaches that adjust characteristics of your neural network such as weights and learning rate, to decrease losses.

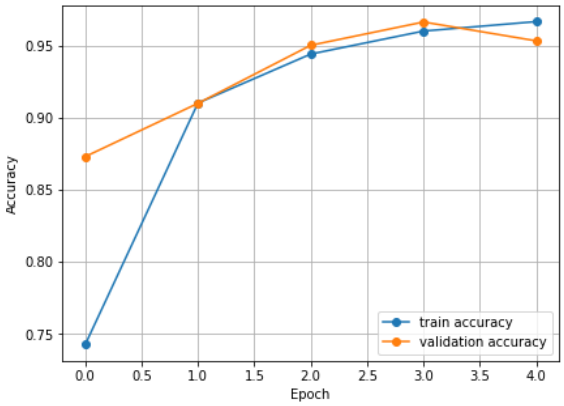
SGD I an approach for finding the best smoothness qualities for an objects function.However,ADAM is sifnficantly quicker than SGD.

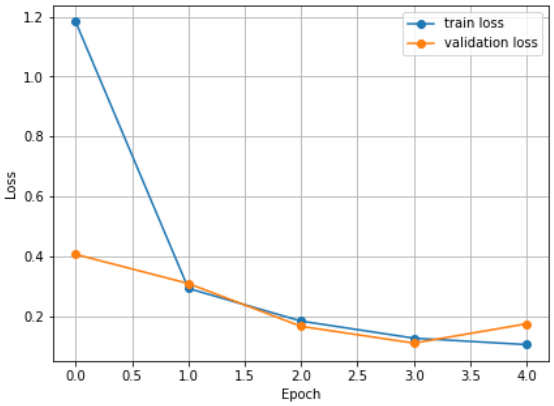
In the training of neural networks,RMSprop is a gradient-based optimization strategy.This normalization evens out the step size,reducing it for high gradients to prevent bursting and increasing it minor gradients to avoid disappear.

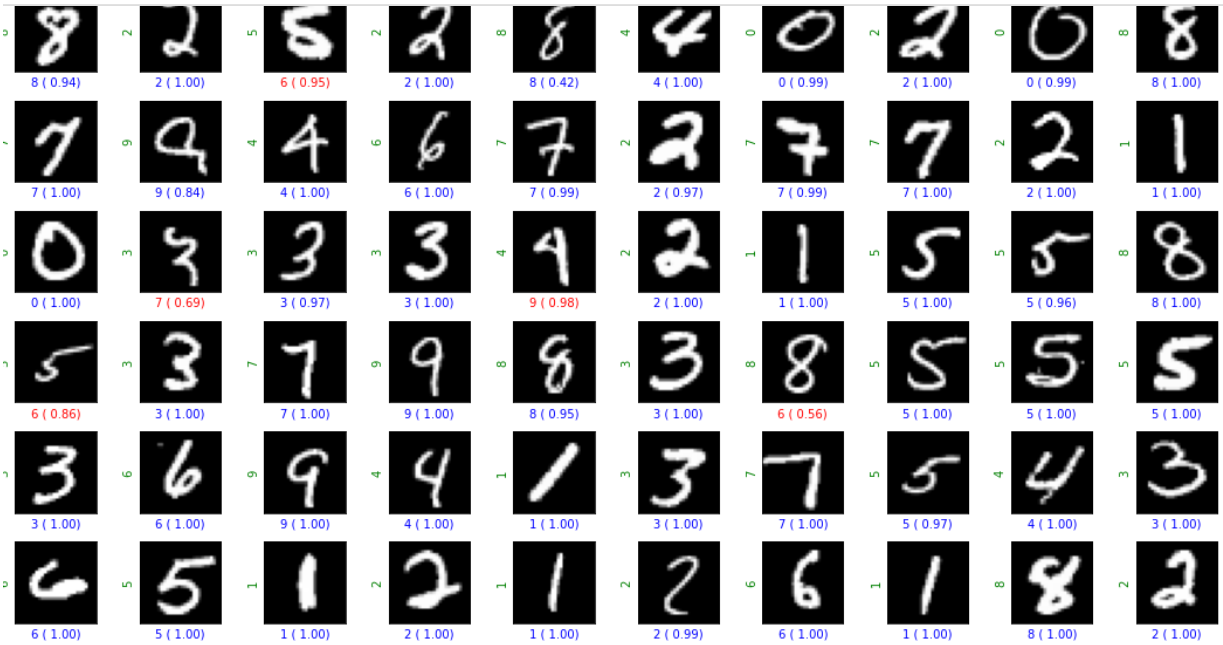
Result:



SGD


Accuracy
Epoch
train accuracy
validation accuracy


Loss
Epoch
train loss
validation loss


8 (0.94)
2 (1.00)
6 (0.95)
2 (1.00)
8 (0.42)
4 (1.00)
0 (0.99)
2 (1.00)
0 (0.99)
8 (1.00)
7 (1.00)
9 (0.84)
4 (1.00)
6 (1.00)
7 (0.99)
2 (0.97)
7 (0.99)
7 (1.00)
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1 (1.00)
0 (1.00)
7 (0.69)
3 (0.97)
3 (1.00)
9 (0.98)
2 (1.00)
1 (1.00)
5 (1.00)
5 (0.96)
8 (1.00)
6 (0.86)
3 (1.00)
7 (1.00)
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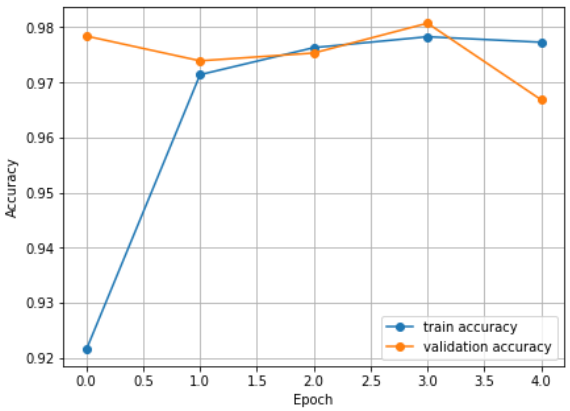
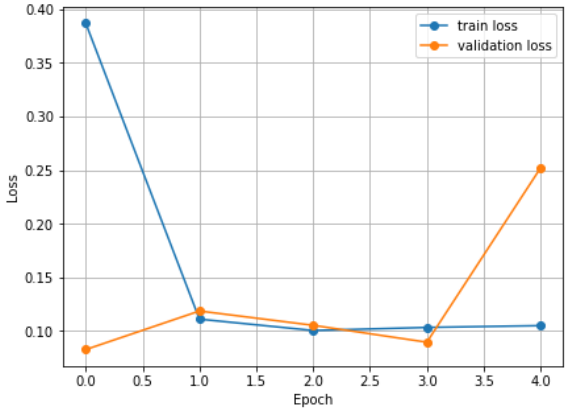
1 (1.00)
8 (1.00)
2 (1.00)

RMSProp





Discussion:

In his project, I have implemented CNN architecture to classify the MNIST handwritten dataset.I have used 3 types optimizer ADAM,SGD,RMSProp to check different RMSProp,The Adam optimizer outperforms the previous optimizers in case off loss.So,In my instance,theADAM optimizer is the fastest and most Accurate optimizer.