Segmentation module for autonomous car

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Weekly Report for 7th Feb - 7th March

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Overview

This is a report of the Segmentation module for autonomous car. This contains the progress made by me on the project in the week of 7th February - 7th March, target for the next week and track of the time invested over the project.

Progress made

1) Learnt about deep neural networks

Learnt about deep neural networks, their basic functions, and why they are used over other models. Understood about how the input layer is related to hidden and the output layer.

2) Learnt about hyperparameter tuning

Learnt about hyperparameters and how they could be optimised to get the best possible model. Got some intuition about how to select the model parameters, depending on our needs of the project.

3) Learnt about mini batch gradient descent and batch gradient descent

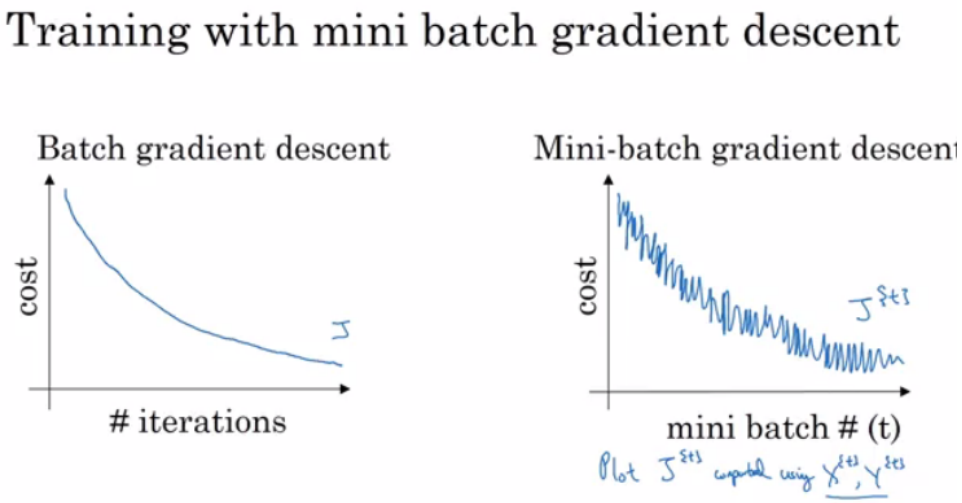

Figure 1:

Understood about how mini batch gradient descent can be used in order to speed up the learning of the model for the project.

4) Learnt about the tensorflow library

Used tensorflow library to build deep neural networks. Understoood about it's various features and how it can be efficiently integrated to write small and efficient code.

5) Completed the assignment given by Soumyajit sir

Used tensorflow library to build deep neural networks to complete the assignment given by Soumyajit sir. Learnt how overfitting can lead to a decrease in accuracy of the prediction. Showed graphs of the cost functions falling and the accuracy increasing with the time given to the model. The link to code is given here[1]. An image of the dataset can be seen here.

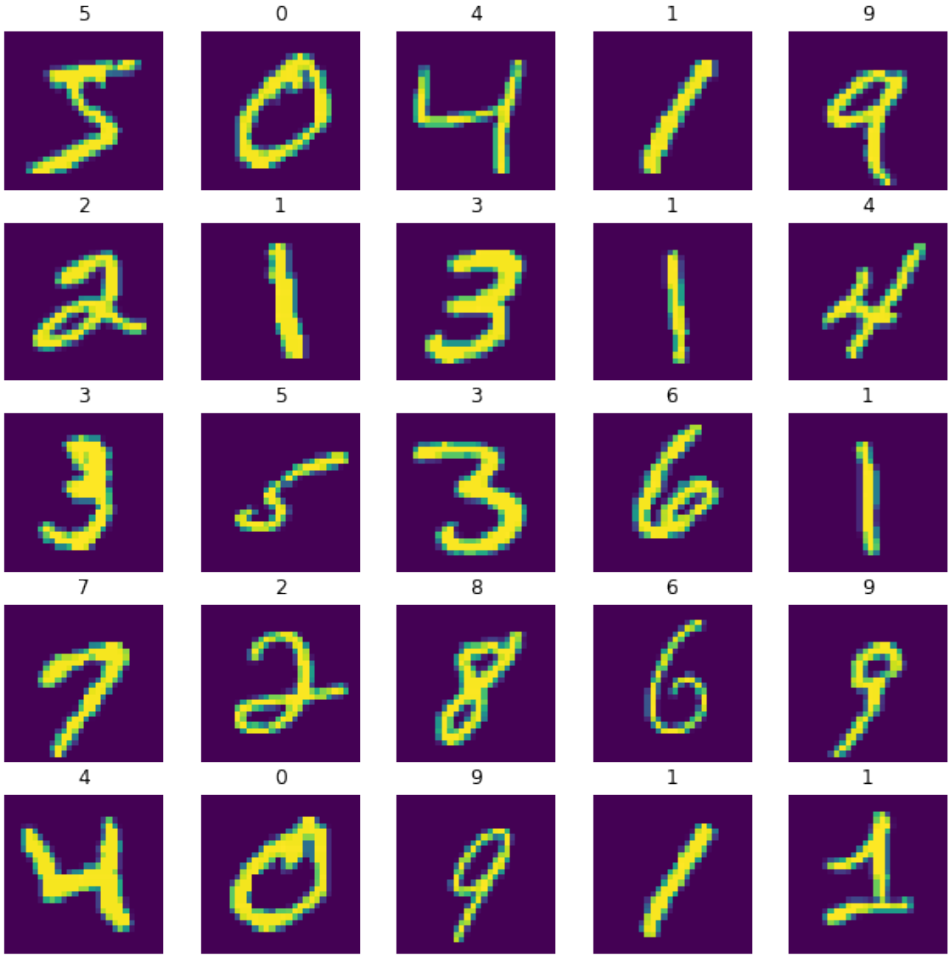

Figure 2: MNIST dataset

4) Learnt about the basics of Convolutional Neural Networks

Learnt about the convolutional neural networks and how they could be used to detect an edge in the image.

Time track

1. Deep neural networks (5 hours)

[1] colab notebook, link to Assignment

2. Hyperparameter tuning (5 hours)
3. Mini batch gradient descent and batch gradient descent (4 hours)
4. Basics of tensorflow library (7 hours)
5. Assignment given by Soumyajit sir (10 hours)
6. Basics of Convolutional Neural Networks (8 hours)
7. Planning and report writing (2 hours)

Target for the next week

1) Learn more about CNN's

Learn about more deeply about convolutional neural nets. And understand about how they could be used and implemented

2) Continue working on the assignments as and when given by

Will continue working on the assignments given by Soumyajit Sir to learn more about the deep learning part and continue to work on the project.

Conclusion

The learning part of the project is almost over. And I can now slowly start working on the project while learning small intricacies side by side.

THE END

THANK YOU
