1 Report for exercise Sheet 1 of the deep learning lab for autonomous driving

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2 Introduction

In this exercise, we were supposed to use the GTSRB dataset to train a convolutional network, to recocnize street signs.

3 Structure of the CNN

The basic structure of the CNN is depicted in table 3.

	Conv1	Max-pool1	Conv2d	Max-pool2
Kernel size	3	2	3	2
Input depth	3		30	
Output depth	30		60	
Padding	1	0	0	0
Stride	1	2	1	0

Tabelle 1: Structure of the CNN

After this, a dropout filter is applied and after linearizing the data, it's first brought to a size of 512×1 and then to 43×1 by linear layers. In the end, a softmax filter is applied.

Every activation layer is a ReLU-Function.

3.1 Sampling

For sampling, the Training dataset was shuffled and split into an Training-Validation fraction of 80/20.

3.2 Optimization

The optimizer is a stochastic gradient descent optimizer with momentum of 0.5 and varying learning rates.

Because the deadline grew closer, 10 epochs were performed, although the data suggested that overfitting didn't begin yet.

Abbildung 1: Learn rate: 0.01, Accuracy: TBD

Abbildung 2: Learn rate: 0.001, Accuracy: TBD

Abbildung 3: Learn rate: 0.0001, Accuracy: TBD

4 Results

4.1 Performance on the training set

The best model on the validation set performed with an accuracy of TBD% on the test set.