



Deep CNN for Traffic Signs Classification

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Motivation

- Self - driving cars
- Application for drivers
- Application for future drivers

Dataset - files

- RGB images
- Gray images
- Train
- Valid
- Test

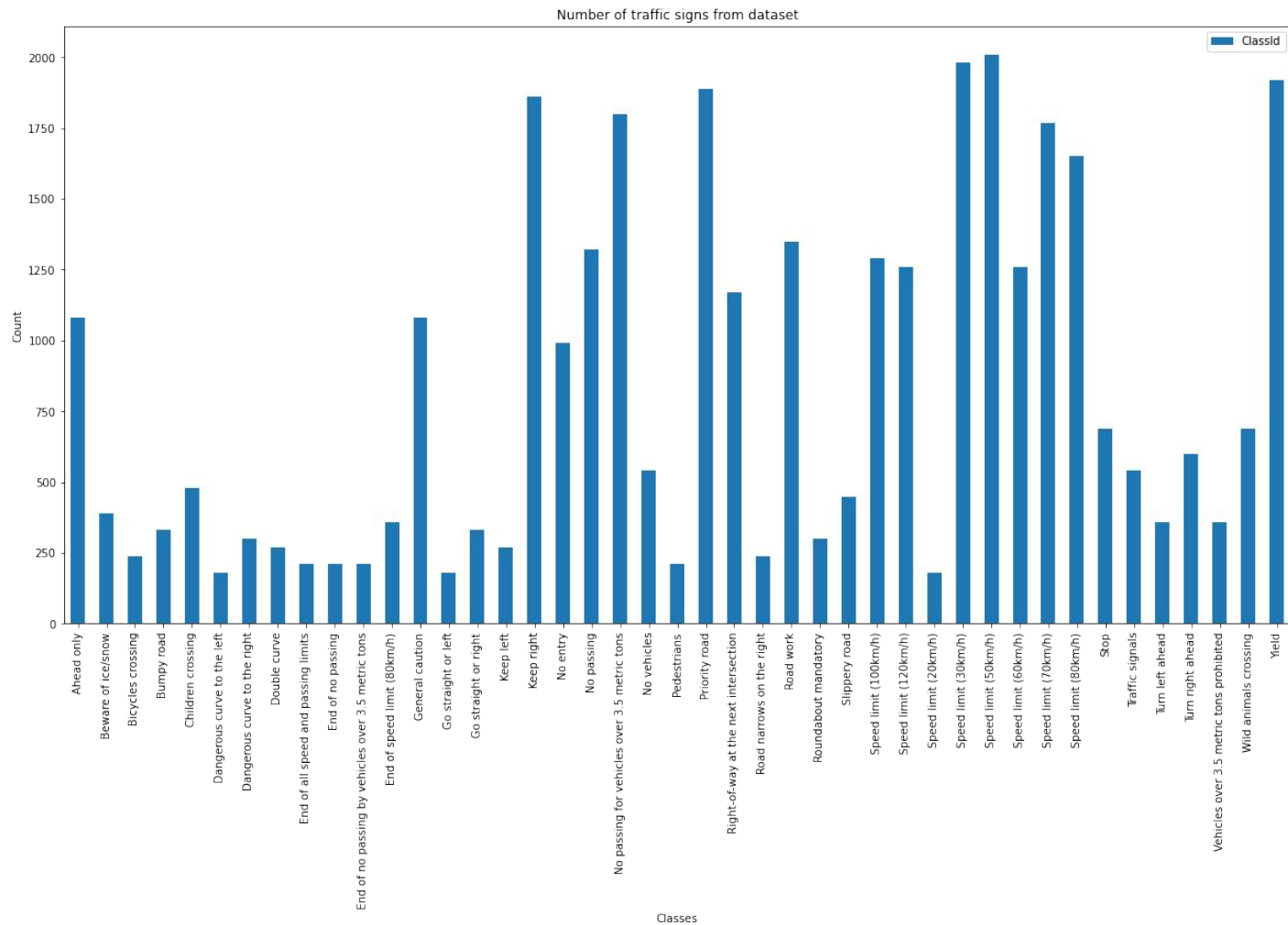
Dataset - train, valid, test

The dataset is split into training, test and validation sets, with the following characteristics:

- Images are 32 (width) x 32 (height) x 3 (RGB color channels)
- Training set is composed of 34799 images
- Validation set is composed of 4410 images
- Test set is composed of 12630 images
- There are 43 classes (e.g. Speed Limit 20km/h, No entry, Bumpy road, etc.)

Dataset - images

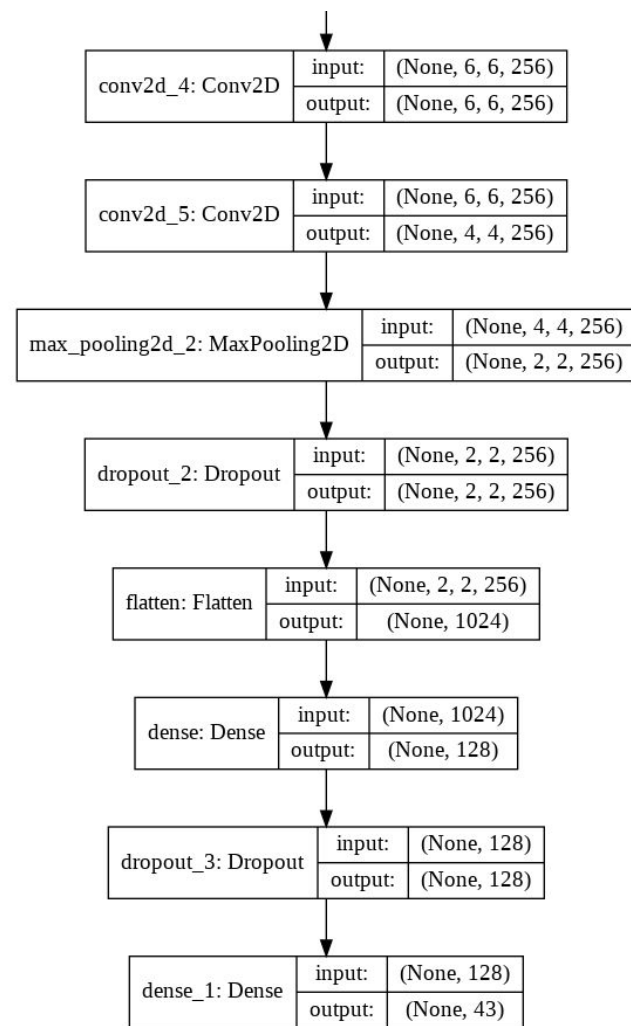
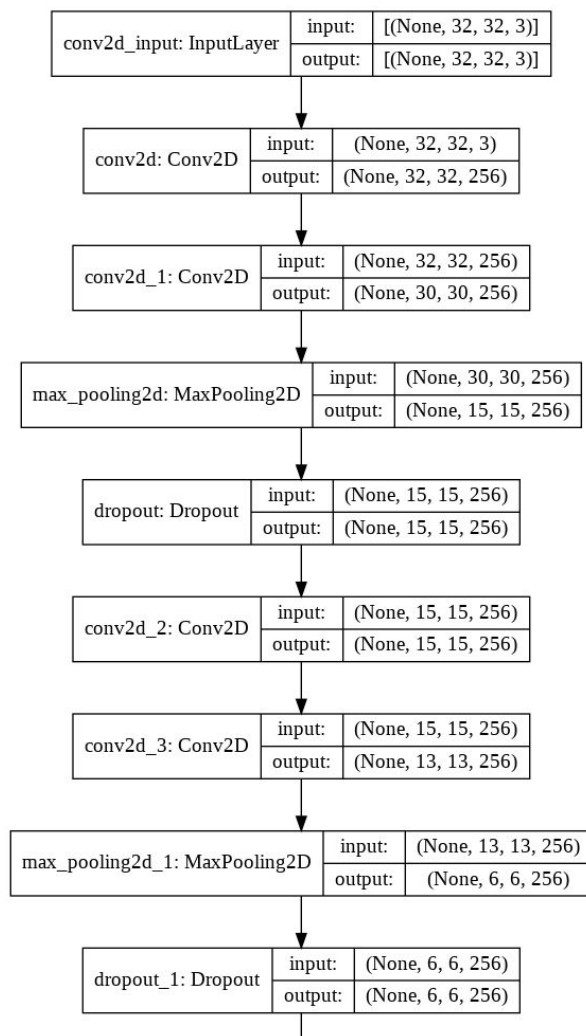




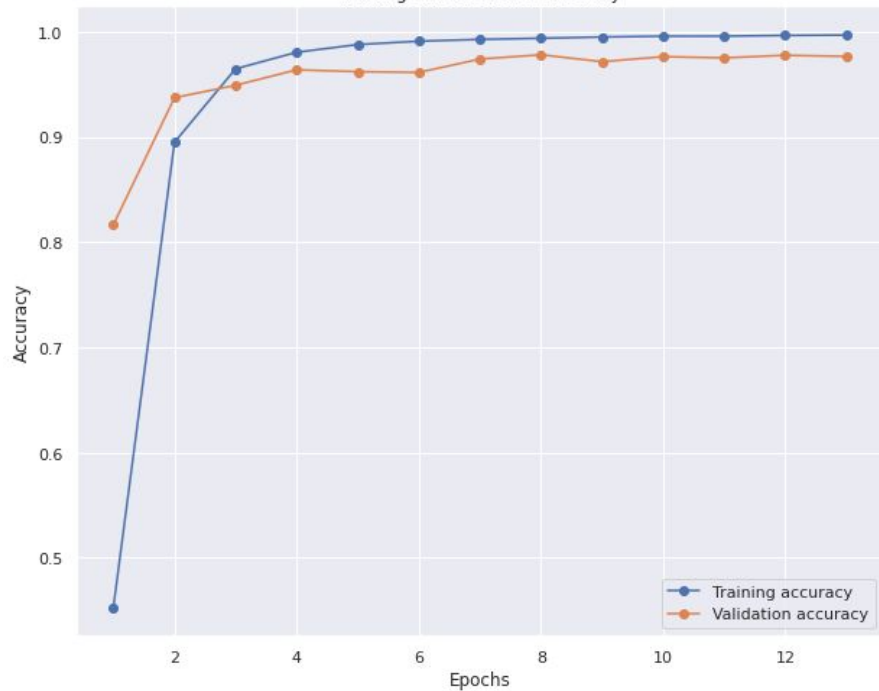
Model architecture

Model:

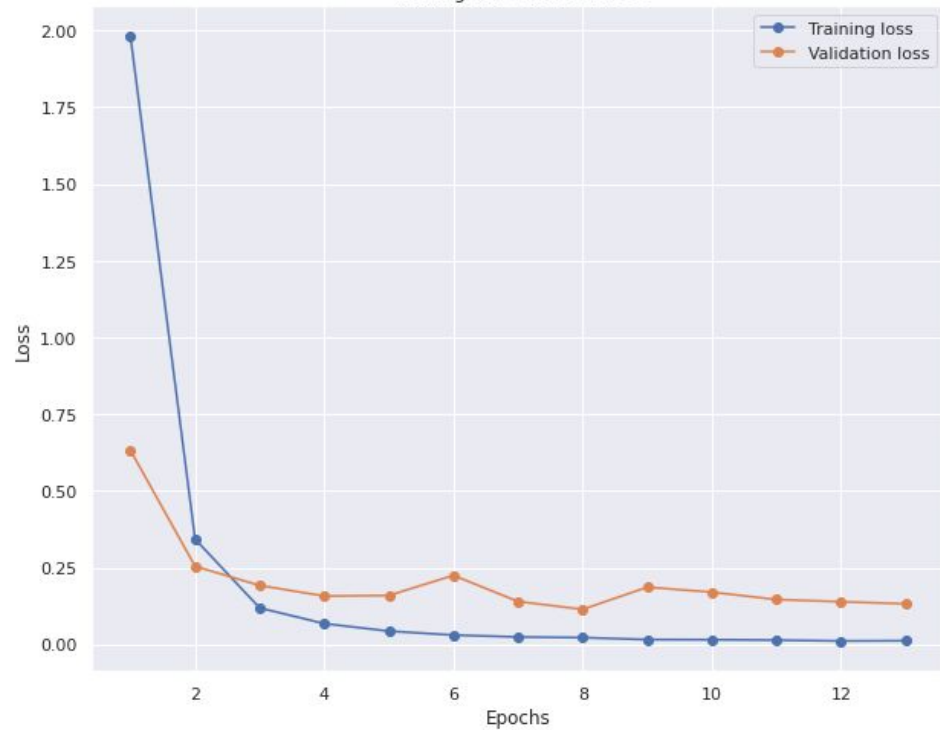
- 6 Convolutional layers using ReLu activation function
- Kernel size 3x3
- 3 MaxPool layers 2x2
- 4 Dropouts
- Flatten with 128 neurons
- Final layer with 43 results using SoftMax activation function



Training and validation accuracy

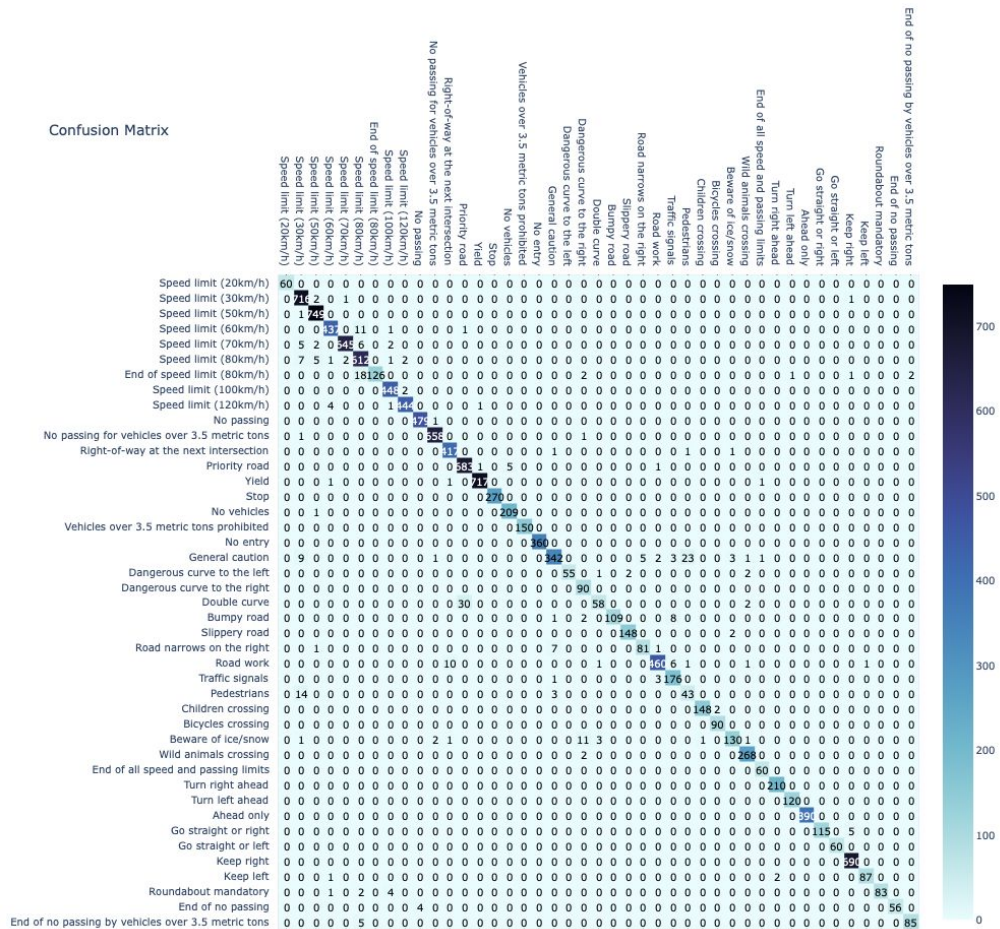


Training and validation loss

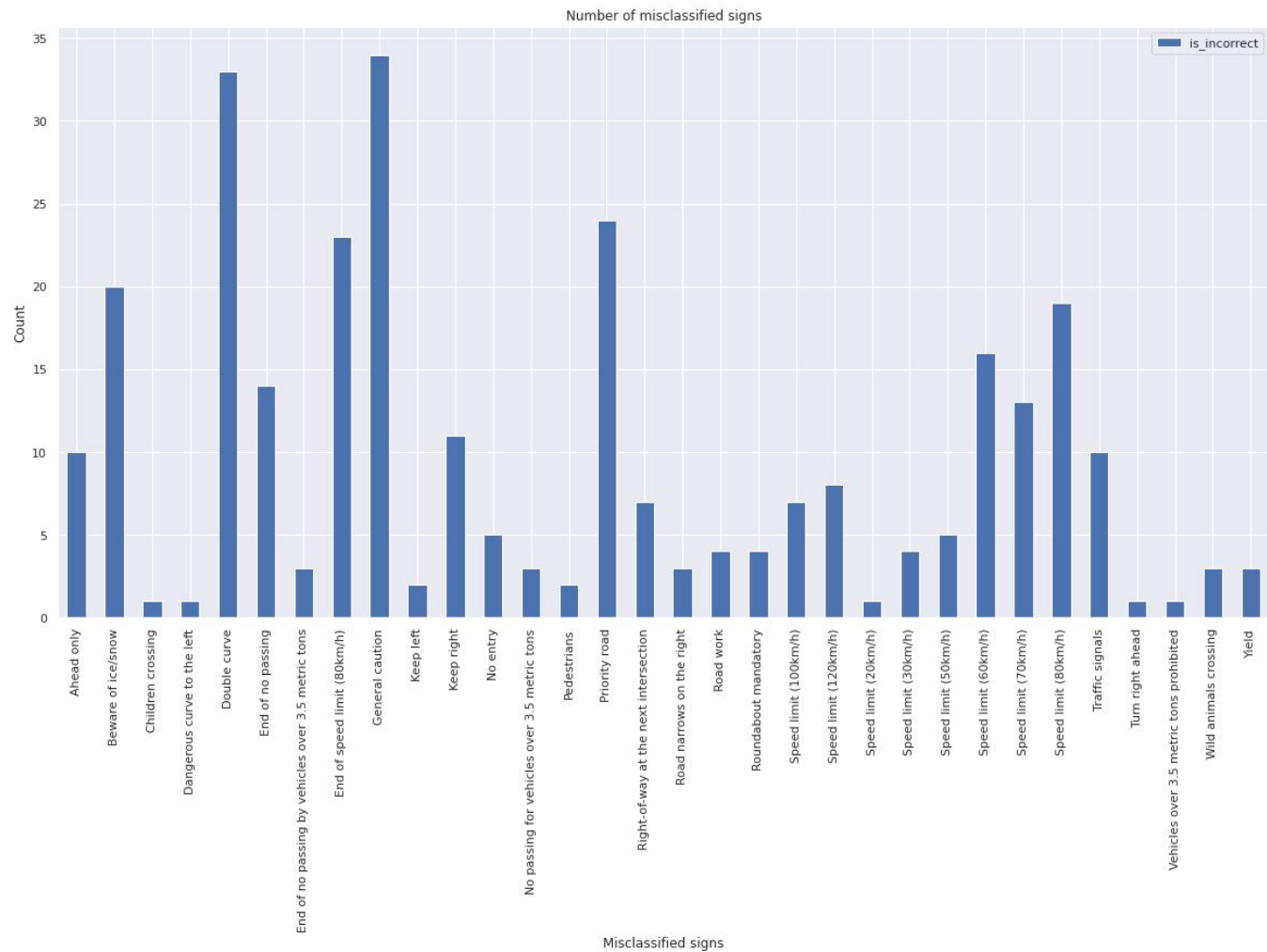


Model results

Model	Results
Train (34799 images)	97,65%
RGB (86989 images)	97,3%
Grayscale (86989 images)	96%
5 samples (9660 images)	97,73%
Transfer Learning (EfficientNet-B2.)	19.46%



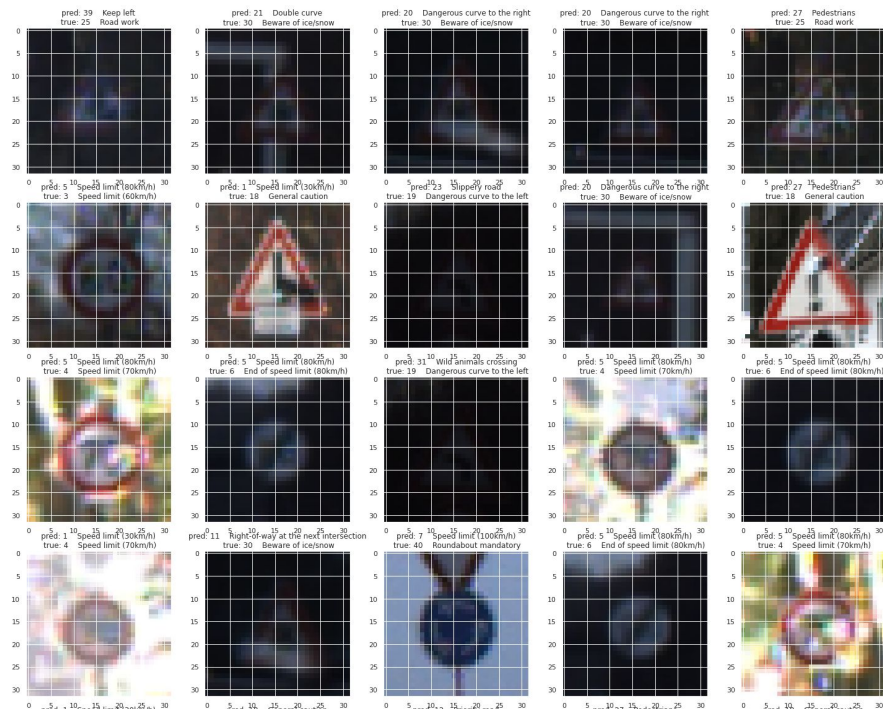
Confusion Matrix



Misclassified images

Number of wrong predictions: 296

Percentage if wrong predictions: 2.34 %





Questions?