HCMC UNIVERSITY OF TECHNOLOGY AND EDUCATION

HCMUTE

Project: Artificial Intelligence
CNN Design for Real-Time Traffic Sign Recognition

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INTRODUCTION

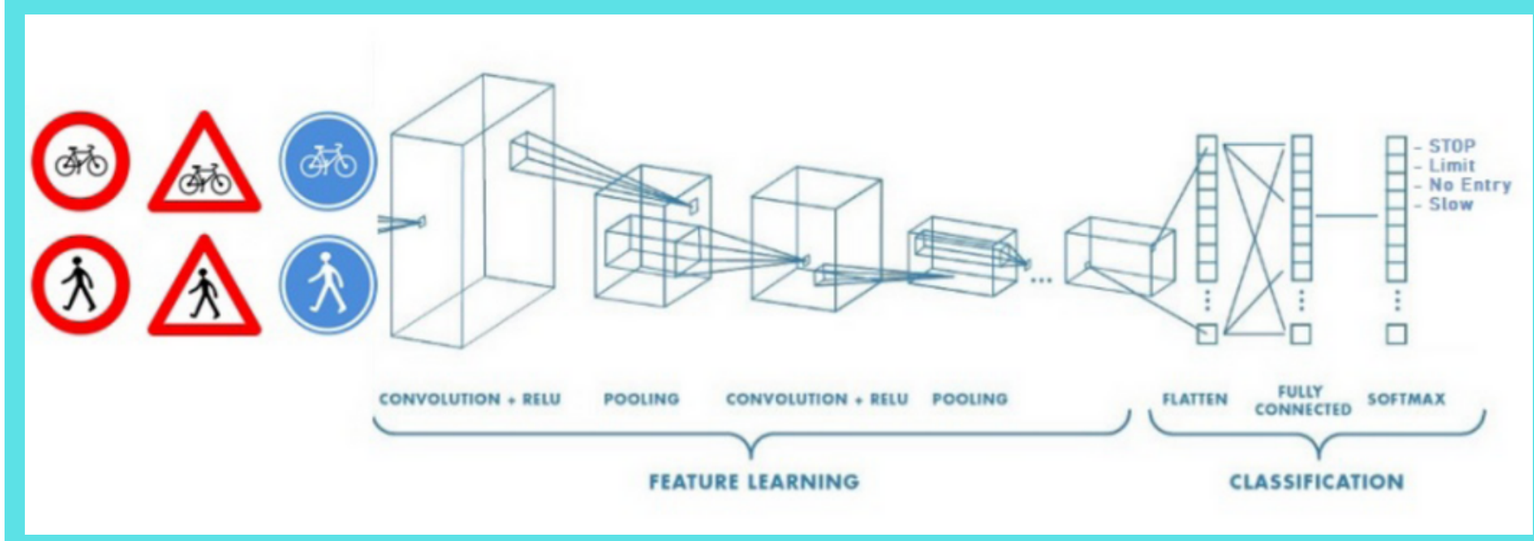
Real-Time Traffic Sign Recognition is one of the important factors for them to be able to operate is to recognize the meaning of traffic signs on the road and comply with that requirement. There are many models and methods to do that, but in this project, CNN is applied to identify 43 most common traffic signs and has a very high accuracy of up to 95%. The meaning of the topic is to:

+Help people with little understanding to identify signs

+Support for the operation of autonomous vehicles

INTRODUCTION ABOUT CNN

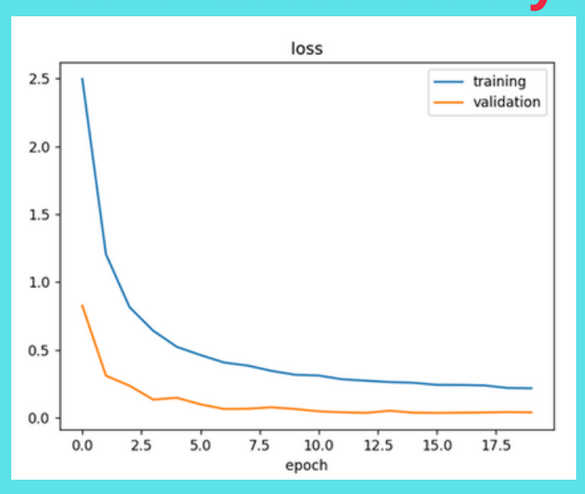
In deep learning, a convolutional neural network (CNN, or ConvNet) is a class of artificial neural network (ANN), most commonly applied to analyze visual imagery. They have applications in image and video recognition, recommender systems, image classification, image segmentation, medical image analysis, natural language processing, brain–computer interfaces,and financial time series.

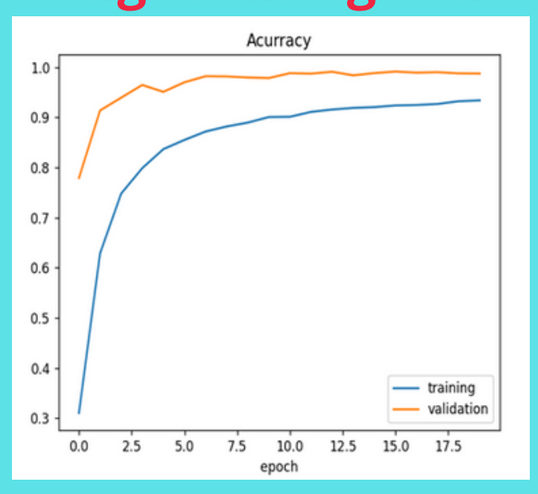


COLLECT DATA → **PROCESS DATA** → **BUILD MODEL** → **TRAIN MODEL** → **TEST MODEL AND BUILD REAL-TIME SYSTEM**

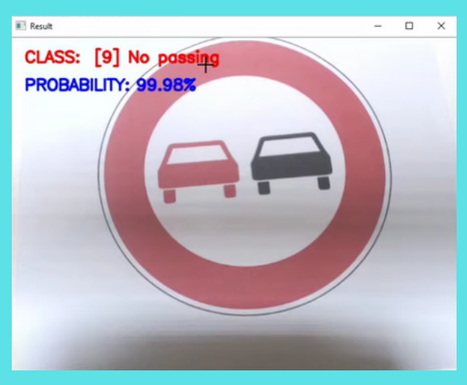
EXPERIMENTAL RESULTS

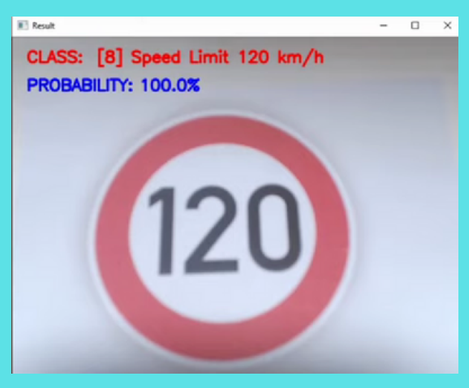
Loss and Accuracy During training time

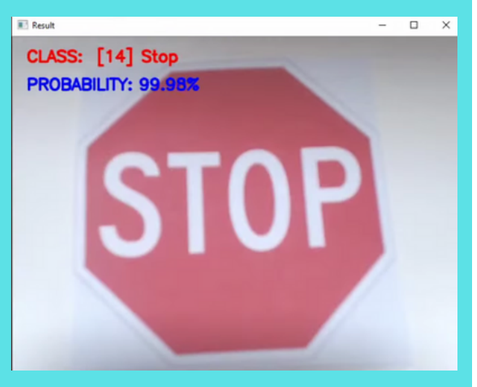




Result while testing real-time







CONCLUSION

The trained model has a high accuracy but can not reach 100% but it is completely believable to help us in TSR (Traffic Sign Recognition)

CNN model is pretty challenging to find out the most effective model and only suitable for fundamental recognitions which are not too complicated.

DEVELOPMENT

In the future, when all of traffic signs is completely collected, a perfect model will be built, it can recognize all traffic signs

The authors is trying to build a model with accuracy as much as possible to apply in self-driving cars.

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