In the last years, convolutional neural networks (CNNs) have proven to excel on multiple computer vision tasks including image classification, object detection and semantic segmentation. They are a powerful tool to teach autonomous cars the capability to understand their complex and dynamic surroundings. There are many different applications for deep learning in autonomous driving and adjusting the network architectures to the task at hand is an exciting field of research.

In this thesis, a novel neural network architecture is to be designed which uses a sequence of input images for semantic segmentation. The proposed architecture should overcome a single image segmentation by using the temporal information given by the image sequence. In order to achieve this, different approaches shall be evaluated regarding computational cost and classification accuracy. This might include the use of recurrent neural networks, 3D convolutions, optical flow and a post-processing of the single image segmentation.

If you are interested, please write an email to the contact below with your CV, transcripts and a description of your coding experiences.

Requirements: Theoretical knowledge in machine learning, deep learning & statistics
Experienced in python and at least one deep learning framework

Topics: Deep Learning, Computer Vision, Autonomous Driving

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Start Date: September, October or November 2019