UDACITY

Return to "Self-Driving Car Engineer" in the classroom

DISCUSS ON STUDENT HUB

Use Deep Learning to Clone Driving Behavior

REVIEW

CODE REVIEW

HISTORY

Meets Specifications

Hi, congratulations on passing this demanding project in which you showed great Python and Computer Vision skills.

Required Files

The submission includes a model.py file, drive.py, model.h5 a writeup report and video.mp4.

Qualify of Code

The model provided can be used to successfully operate the simulation.

Your pipeline is great and provides a working solution, calculating steering angles from input images.

The code in `model.py` uses a Python generator, if needed, to generate data for training rather than storing the training data in memory. The `model.py` code is clearly organized and comments are included where needed.

Well done. The use of generators helps reducing memory problems and allows you to train on large datasets. There is however no need to shuffle each yielded batch as it is back propagated in its entirety.

Model Architecture and Training Strategy

The neural network uses convolution layers with appropriate filter sizes. Layers exist to introduce nonlinearity into the model. The data is normalized in the model.

Well done now!

Train/validation/test splits have been used, and the model uses dropout layers or other methods to reduce overfitting.

Learning rate parameters are chosen with explanation, or an Adam optimizer is used.

Smart to use the adam optimizer.

Training data has been chosen to induce the desired behavior in the simulation (i.e. keeping the car on the track).

Architecture and Training Documentation

The README thoroughly discusses the approach taken for deriving and designing a model architecture fit for solving the given problem.

You wrote a nice report that contains all the required sections. And it really helps communicating your results.

The README provides sufficient details of the characteristics and qualities of the architecture, such as the type of model used, the number of layers, the size of each layer. Visualizations emphasizing particular qualities of the architecture are encouraged.

The README describes how the model was trained and what the characteristics of the dataset are. Information such as how the dataset was generated and examples of images from the dataset must be included.

Simulation

No tire may leave the drivable portion of the track surface. The car may not pop up onto ledges or roll over any surfaces that would otherwise be considered unsafe (if humans were in the vehicle).

Well done, your car drives around well. The swinging behavior is probably caused by the many small steering angles in the training set. By skipping part of the center camera images with small steering angles you'll have a good chance of improving performance.

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