

# 05 - Deeplearning and autonomous driving

Maxime Ellerbach

March 2023

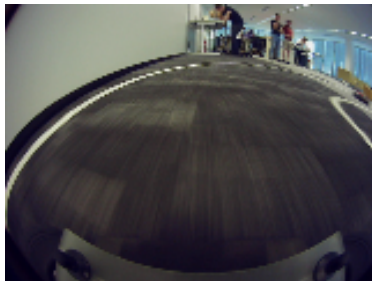
# End to End approach

- Easy to get started
- Hard to debug the learned features and their impact on the output prediction

# End to End architecture

An example of input data

- Image from a camera facing forward
- Lidar data
- Current speed
- Gyroscope
- Accelerometer
- ...

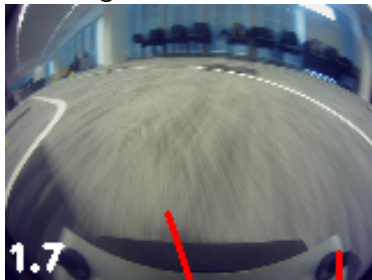


# End to End architecture

An example of output data (Labels)

- Steering
- Throttle
- ...

Here, we are directly predicting the actions the car should take



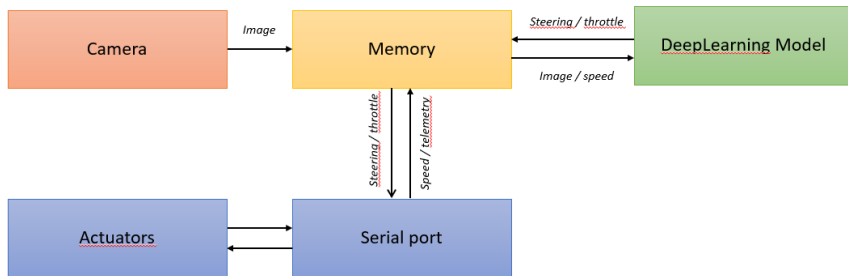
# Solving problems separately

Instead of directly predicting the throttle, we could split the problem into multiple smaller one:

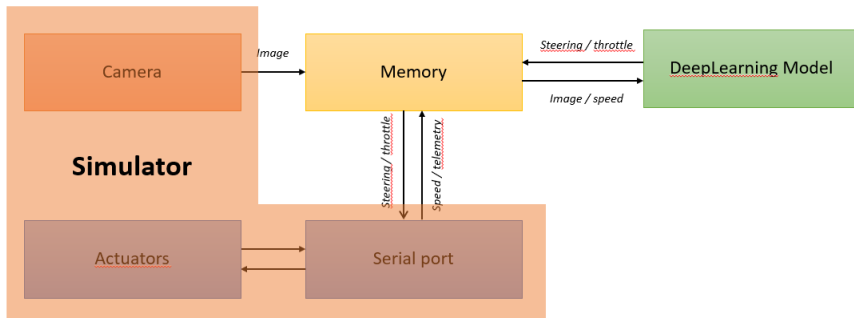
- Are we currently turning ?
- How far is the next turn ?
- How fast are we currently going ? Should we go faster ?

We can then generate a policy which will act better than an estimation of our driving : going faster than human

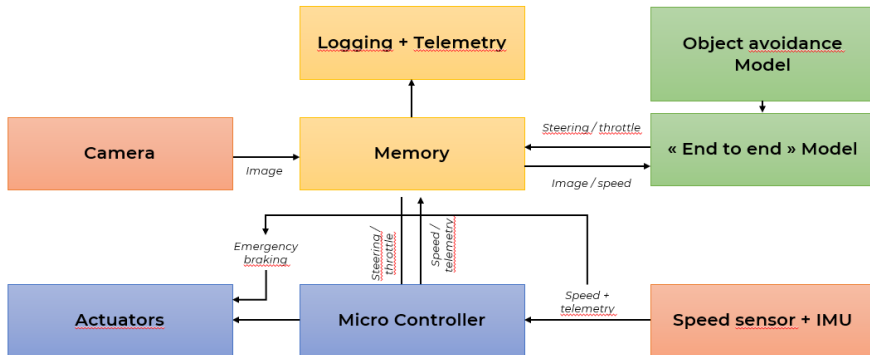
# Architecture of the car



# Architecture of the simulated car



# A more realistic architecture of the car





# Practice 03 - Using DonkeyCar Simulator

- Installation of the simulator
- Manual driving data gathering
- Training
- Testing