

Mobile Robots

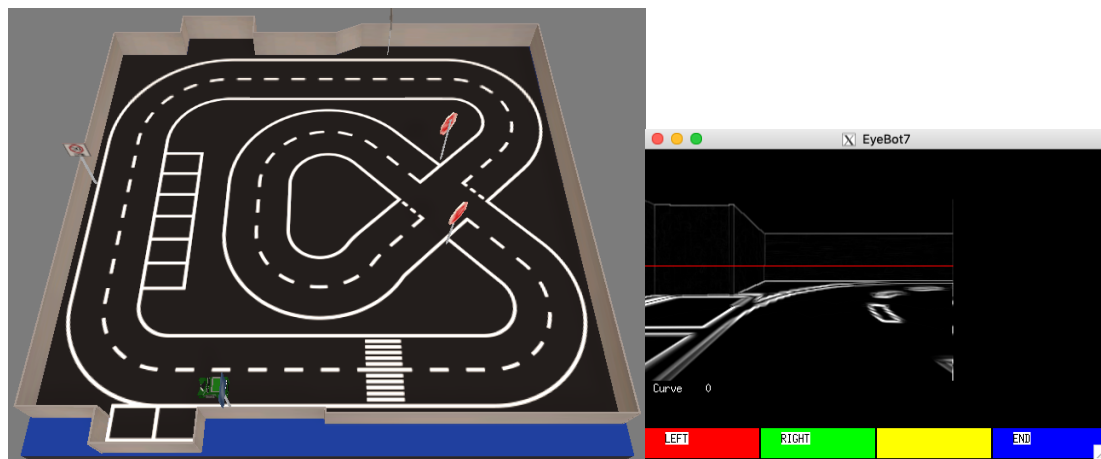
AUTO4508

Lab Assignment 8 – *Individual* – Neural Networks Points: 10+bonus

EXPERIMENT 1 (4 points)

Adapt the given Carolo-Cup program and while driving perfectly in the lane, collect at least 1,000 pairs of:

- camera view *and*
- correct steering angle



EXPERIMENT 2 (4 points)

Install TensorFlow and run the deep-learning stack from Nvidia's end-to-end learning project for your driving data:

- TensorFlow <https://www.tensorflow.org>
- Nvidia <https://images.nvidia.com/content/tegra/automotive/images/2016/solutions/pdf/end-to-end-dl-using-px.pdf>

Submit the diagrams for accuracy and loss for your learning project.

EXPERIMENT 3 (2 points)

Verify the TensorFlow result by extending the Carolo-Cup program, so it will take the TensorFlow output to drive the robot. It should now be able to navigate error-free along the given track.

You can further check the robustness of your solution by testing the program on a track different to the one used for training.

BONUS MARKS (2 points) for perfectly driving a full loop in both directions