

Session 6B: Follow the Line

Objectives

- Use fitted line to design a suitable error metric (cross track error) for line following
- Control motors based on defined error metric.

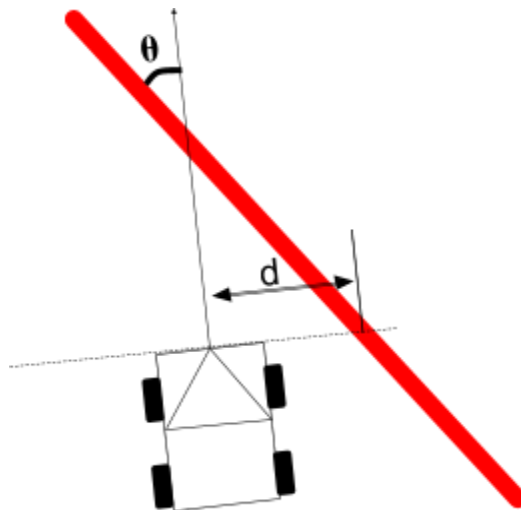
Cross Track Error

Before the robocar can follow the line it estimates, it must first define a quantifiable measure of error, so that it can answer the question: “how much am I deviating from the line I’m supposed to follow?”

Exercise 6-2: Direction and Cross-Track Error

For this task, we’ll make use of two measurements:

- d : Distance of the robocar from the line, and
- θ : Angle deviation between the direction of the line and the robocar’s direction of travel.



Open folder `ex-6-2-Cross_Track_Error`, which contains a ROS workspace. Open file `camcontrol_node.py` of the `camcontrol` node.

TO-DO:

- Design a meaningful value for cross track error (cte) such that positive values means we should steer the car RIGHT to bring it back to the center.
- Replace the variable cte a line 152 with the calculated measure of error.

Exercise 6-3: Line Follower

TO-DO:

Test your robocar on the track! Adjust the (linear combination) weights (`wt_dist` and `wt_ang`) used for your measure of error (cte) to see if you can improve the tracking performance.

(Note: Don't worry if you're not able to follow the line around bends, we'll learn a very powerful control technique in the next session!)