"Control of Mobile Robot" Project

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Abstract

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2.1.1 Original MIT Racecar Packages

ackermann_cmd_mux	...
ackermann_msgs	Contains definitions of **AckermannDrive** and **AckermannDriveStamped** messages, used by the racecar to compute movements.
racecar	...
racecar_control	Contains launch files to load controllers used to manage the motors of the racecar. Also load nodes which dispatch messages to controllers.
racecar_description	Contains a description of the racecar, in terms of models, meshes ecc... It will be used by Gazebo to represent it.
racecar_gazebo	Mainly contains launch scripts used to load all necessary nodes, worlds and other components to open a Gazebo instance with a controllable car.

2.1.2 Added Packages

car_control	Contains nodes used to send commands to the racecar, receive odometry data and control the car autonomously.

Chapter 3

Original System Introduction

Chapter 4

(Our) System Description

Chapter 5

Detailed Package Description

5.1 Package car_control

5.1.1 Node car_commands_node

This node has been thought to be an interface between the racecar and the controller. It should adapt commands received by the controller, which are in a specific format, and transform them in **AckermannDriveStamped** messages.

Parameters of the node, as initial velocity and initial steering angle, are written in a specific YAML configuration file.

Actual Implementation

This node simply send an **AckermannDriveStamped** message to the topic *vesc/ ackermann_cmd_mux/input/teleop*. That topic is used by the original MIT system to read commands to perform computation to make the racecar move.

The sending criterion is simple. It just generate messages which make the racecar move in a straight line at a specific velocity.