Technical Report

Description

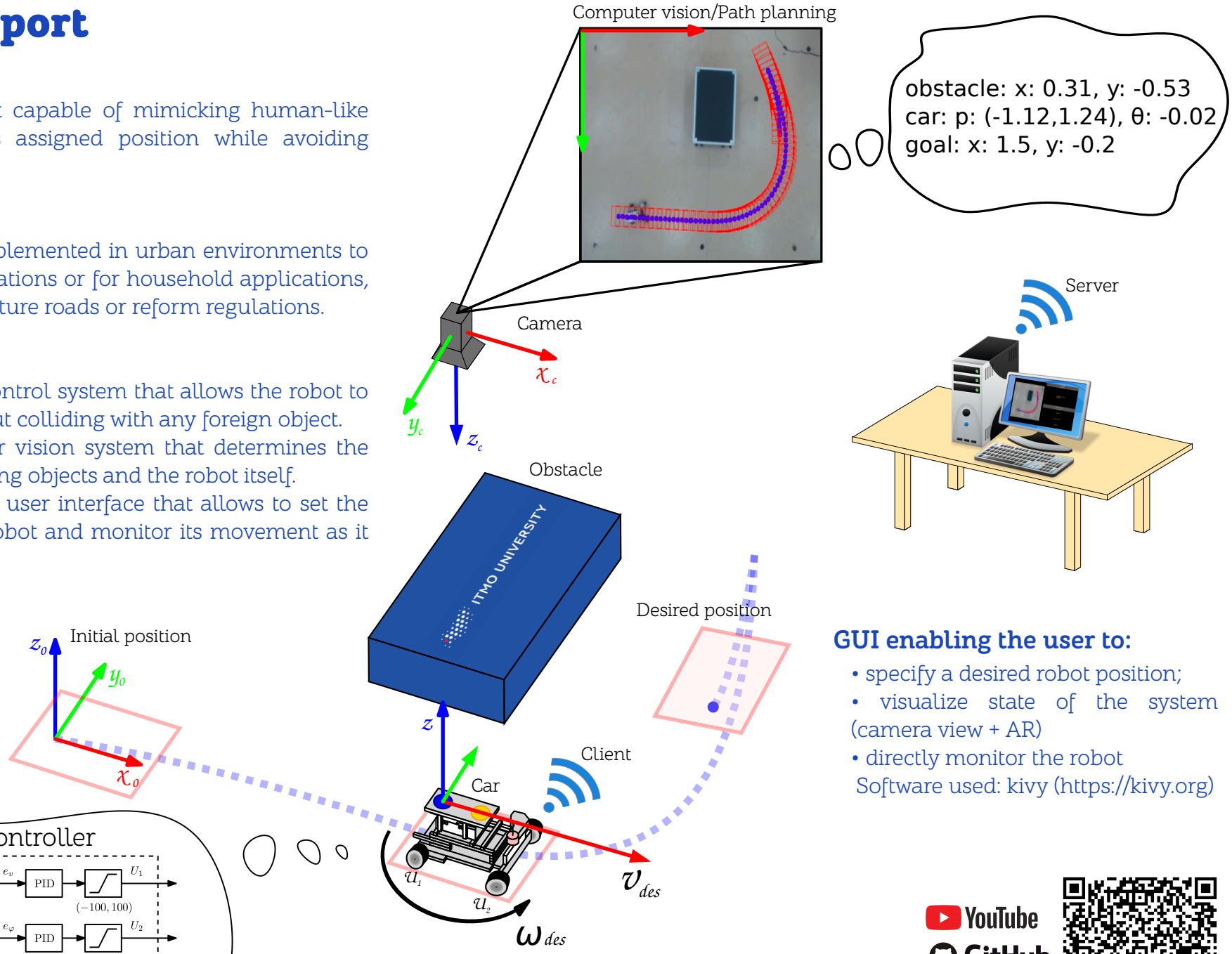
A mobile car-type robot capable of mimicking human-like trajectories to reach its assigned position while avoiding obstacles.

Motivation

Such systems can be implemented in urban environments to perform warehouse operations or for household applications, without having to restructure roads or reform regulations.

Objectives

- implement a motion control system that allows the robot to reach a given goal without colliding with any foreign object.
- implement a computer vision system that determines the position of the surrounding objects and the robot itself.
- implement a graphical user interface that allows to set the desired position of the robot and monitor its movement as it moves towards it.



GUI enabling the user to:

- specify a desired robot position;
- visualize state of the system (camera view + AR)
- directly monitor the robot

Software used: kivy (https://kivy.org)

Kinematics DOI: 10.1109/TIV.2016.2578706
Trajectory controller DOI: 10.1016/S1474-6670(17)38011-4
Path planning DOI: 10.1155/2017/2521638

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