

Robot Practical Course Bachelor Assignment #4

The competition: This is the last assignment sheet for this course, but be prepared for a hell-run of exciting, mindblowing, competitive work! Refill your coffee stock, get a last night of relaxed sleep and join the adventure!

In the next weeks you will prepare the Turtlebots for a “laser-tag” match. Every bot gets a number of AprilTags attached on visible parts of its body. An AprilTag is basically a QR-code that can be used to detect the position and orientation of the object it sticks on via a simple webcam (or in our case the Kinect).

You should discuss different strategies you could implement for playing laser-tag and agree on the approach your going to take. Divide the overall goal into small steps and approach them in a coordinated manner.

Rules

- You should use the `apriltag_ros` package to detect your opponents apriltags
- You are allowed to use the `move_base` action to navigate your robot across the room
- You can also control your robot using `geometry_msgs/Twist` messages, as you did in previous exercises
- You should use the game client to interact with the game master
 - Clone the client package into your workspace:
`https://github.com/TAMS-Group/rpc_game_client.git`
 - It offers a ROS service to score points.
 - The client will identify your player with the hostname
- The game master will control the gameplay:
 - You will not be able to move before the game started
 - You may only submit one scoring request every 10 seconds
 - After your robot was tagged, it will not be able to move for 5 seconds
- The game master will score your submissions:
 - The score will be graded on:
 - * The distance to your opponent
 - * The horizontal distance of the AprilTag to the center of the image
 - * the rotation of the AprilTag around the vertical axis
 - It is possible to earn no points even if there is an AprilTag in the submitted image!

Cheating is prohibited and leads to bad Karma¹!

¹and disqualification