

## 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.

### Rules

- You should use the `apriltags_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://redmine.mafiasi.de/robot-practical-course/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 Karma<sup>1</sup>!**

---

<sup>1</sup>and disqualification