

# Assignment 4

Deadline : 15th March, 2024

March 5, 2024

## 1 Preliminaries

You have to write a server that takes images of ArUco Markers with different IDs and returns the coordinates of their bounding boxes and IDs into a custom-made ROS message.

The custom ROS message must consist of a 2D Array, such that each row contains an array of co-ordinates of bounding boxes and a separate array that consists of IDs of different ArUco tags. Also, make sure you use a class and not use global variables. Refer below:

- ArUco Detection

## 2 Task I

Write a ROS client which sends images of the ArUco tag to a ROS server and in turn gets the message consisting of the coordinates of the bounding boxes and the IDs of the respective markers. For testing, use your webcam to send images. We'll soon share a video that will be used for testing your code. So, make sure you configure your code to take in path to video as input parameter.

## 3 Path Planning

Assume that the markers are obstacles and compute a path from the initial pose to a final goal pose. (Make a separate server) Use Rapidly exploring random tree for path planning. Reference:

- RRT

## 4 Submission Guidelines

Keep the same workspace and package. Keep all this in a private Git repository until the assignment submission deadline and make it public after that.

Keep pushing whatever changes you do throughout the assignment into your repository so you can track down the changes which are creating problems and revert to the older version whenever required.

**Make sure to do the assignment in Python**

**ALL THE BEST!!!**