Squid Game

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G01

Abstract

Our project implements the mechanism of a "Red Light, Green Light" game from the famous TV series "Squid Game."

Game strategy:

1) The players are positioned in front of the robot, and the game is started

2) robot turns away from the players, and the green light is turned on. Players can move

3) Red light, the robot turns back to the players. They need to stand still.

4) If the robot detects movement, the player is neutralized with a “killer” drone. The player is excluded from the game.

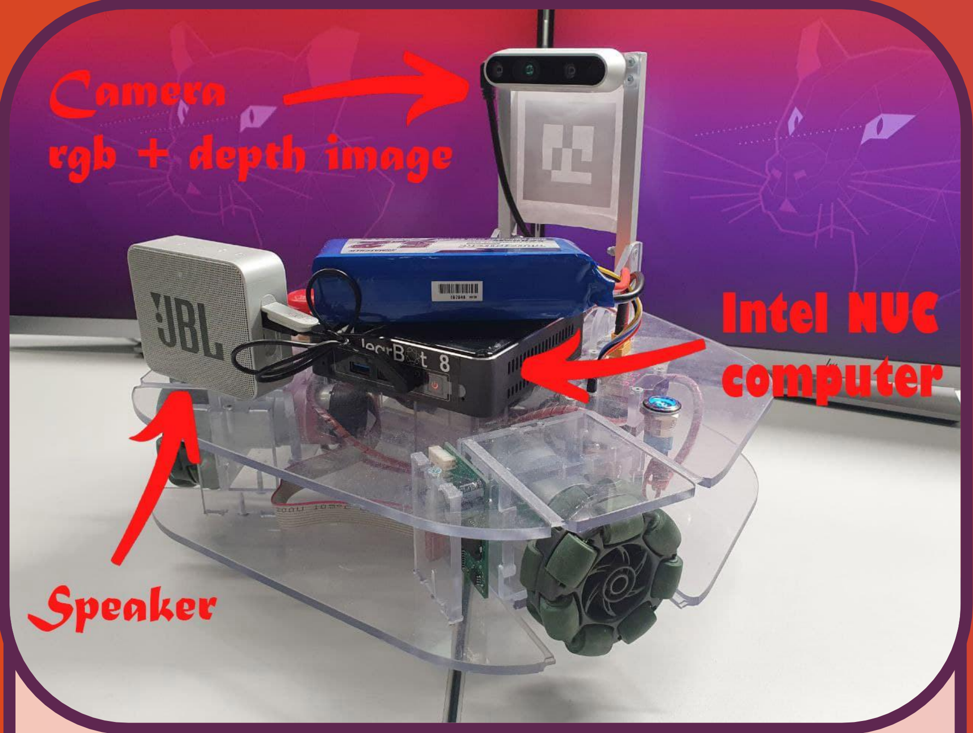

Figure 1. *Robot*

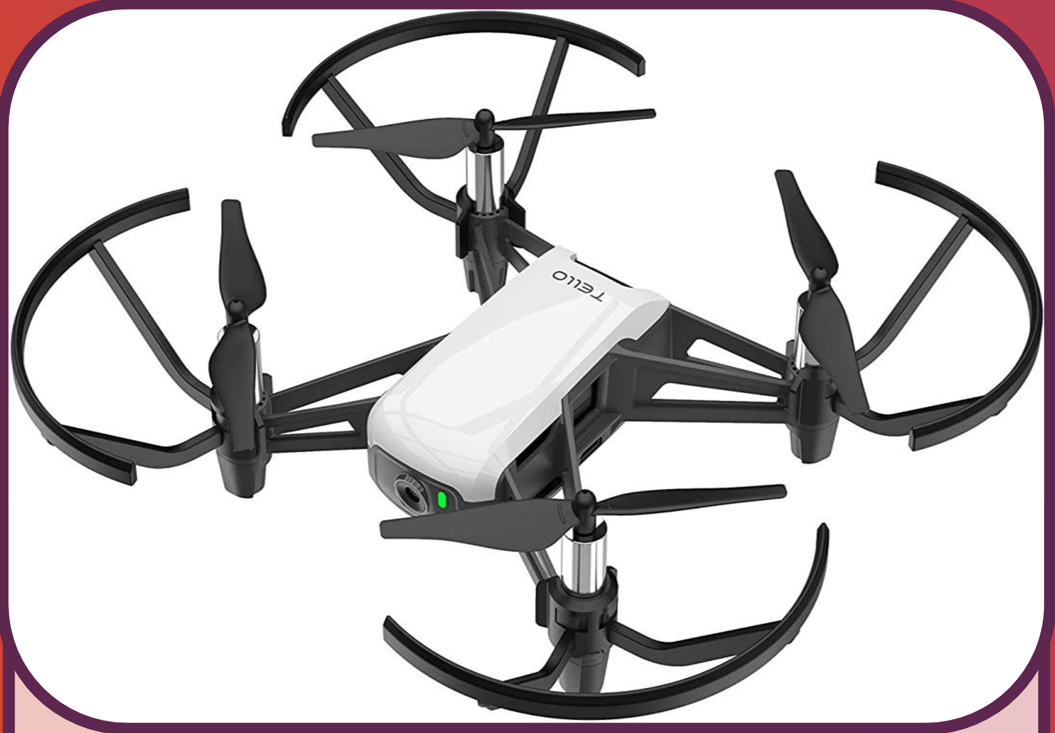

Figure 2. *“Killer” drone*

Hardware

The hardware part consists of two components: a clerabot/robotont(**Fig.1**) which acts as a seeker which can produce sounds while a Dji Tello drone(**Fig.2**) acts as an indicator of the person who have to leave the game

Visuals & sound effects

While the robot searches for motion a crosshair animation is displayed. The robot says green light and green box appears on the screen when it is allowed to move and red light when players have to stay still. Unfortunately there was an LED strip planned but MQTT didn’t work so the color is just displayed on the screen. The person who violates the rules is considered to have lost and the executor drone is engaged in order to deliver the message to the looser in the most comprehensive way: by flying with a closer and making shooting sound by the robot.

Technical part

The motions is detected by opencv. The distance to the person who moved is calculated using a point cloud produced by realsense camera. However, there is an issue since the FOV of color camera doesn’t match FOV of point cloud. The sound is played using ROS package sound_play. Dji Tello drone can hover over the same spot thanks to the second camera pointing down which is unfortunately inaccessible remotely.

Visuals example

You can see the examples of visuals on the right. It can also create several bounding boxes but crosshair is only one at a time

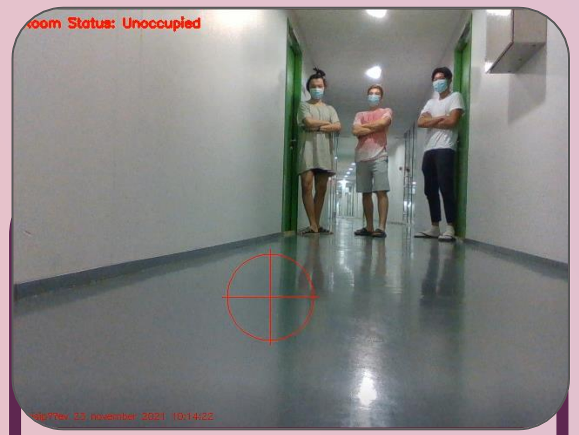

Figure 3. *No motion*

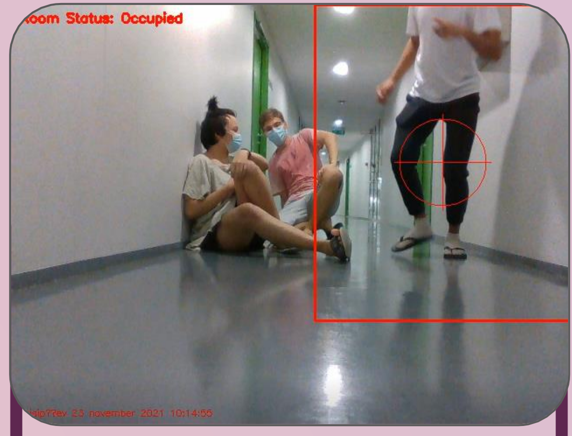

Figure 4. *Motion*

Project poster session in LOTI.05.010 Robotics I 2021/2022 autumn