ABSTRACT

Project Name: Automated Turret
Team Name: TechFire

Introduction

We plan to make an automated turret which can lock onto a pre-specified target and shoot it. We will be using Image Processing to identify the target and then use a mounted gun(which can move in the horizontal and vertical axes), on which we have mounted a camera to aim and shoot.

Motivation

The automated turret can be used at the borders to reduce the number of patrolling soldiers, hence reducing the chance of military casualties. It can also be modified to be used as a remote controlled turret which sends a video feed to the user to identify and neutralize targets from a safe distance.

Components to be Used:

1. 2 DC motors (10-20 RPM)
2. Raspberry Pi
3. R-Pi Camera and Mount
4. Toy Gun
5. L298N Motor Driver
6. Servo Motor

Concepts Used in the project:

A camera mounted on the gun will shoot(pun intended) a video feed of the surroundings and send it to R-Pi for processing. The camera and gun assembly will be fixed on a mount which can be rotated about the vertical and horizontal axes using 2 low RPM DC motors. Hence the camera can scan the entire surroundings and search for the target. The target will be identified using OpenCV(which will be installed on the R-Pi) based on the pre known appearance. Once the target has been located, the gun will lock on to the target and it will shoot it. The gun will be triggered using a Servo.

Plan of Action

1st Week

Learning OpenCV for image processing and figuring out the specifications of the components we need and buying them. Also figuring out the design of the mount for the Gun and Camera assembly.

2nd Week

Using OpenCV to track an object of a particular colour. Making the trigger mechanism for the toy gun. Making the mount for the gun.

3rd Week

Completing the mount with Motors and testing the movement of the Gun assembly using a Joystick and rectifying all the errors that occur.

4th Week
Attaching the camera to the mount and figuring out an algorithm to scan the surroundings and then identify and follow the target.

5th Week & 6th Week
Implementing OpenCV on R-Pi, putting everything together and solving all the errors that occur.

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