MIDDLE EAST TECHNICAL UNIVERSITY
DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

TROY TECH
WEEKLY REPORT #2

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Progresses for Previous Week:

We firstly decided on our exact logo which is shown in the cover page. Then, we've kept researching for projects. After finishing these researches we will evaluate them separately in the following days. However, at that moment we are still doing researches. We will indicate some advantages and disadvantages of projects below.

Project 1: Robot Catching Balloons

Advantages: Not available comparing to others. But it's more fun.

Disadvantages: The mechanical part of this project is the hardest among others because it will be matching with another robot and also it needs a robot arm to catch the balloons. Secondly, motion of a balloon is unpredictable. For example, it can fly away because of wind and the robot can be confused. Thirdly, balloon is an explosive substance. Therefore, The robot should be very precise.

Project 2: Teleport Robot

Advantages: Image process is not needed if we choose transmitting raw video. User controlled robot is a better choice for than autonomous considering the speed and fast reaction. In addition, we believe that we can find a suitable video transmission module to handle with.

Disadvantages: 30m video share without wifi is a real problem for transmitting video. It can be done with a radio communication, yet we don't know whether it works also for indoor or not.

General Research:

For the wireless transfer of the signal carrying video information, we did some literature research. If we can make use of a RF transceiver IC in our design, it will be easy to transmit the video signal from the on-board camera to our control unit. For example, an ultra low-power single chip 2.4GHz transceiver (nRF24L01+) can carry information upto 2 MBps and that will be enough for our application. Alternatively, we tried to find another solution to the wireless communication without using wi-fi. The common solution for this problem is using 5.8Ghz wireless transmissions systems. They can carry enough data and it's not possible for them to be interrupted and distorted by 2.4Ghz wi-fi. It's also used for indoor applications and it can be the solution for us to achieve project requirement 30m.

Project 3: Vehicles chasing each other on an elliptical surface elevated from ground level

Advantages: Its mechanical design is simpler than the others because the vehicle is just required to go on a path. It does not need to pull, push or catch something. Therefore, there is no need to spend extra time to make a creative design.

Disadvantages: It is required to use real-time image processing and it is a difficult and risky technique because light, tone and color of external environment can change and affect the measurements. Moreover, Any external camera overlooking the field are not allowed.Thus, we cannot transfer information such as location and the path border to the robot externally.

Project 4: Robot extracting the plan of its surroundings
Advantages: In this project, robot does not require any additional mechanical needs.

Disadvantages: It is hard to detect objects by image processing because every object has the same color . Another disadvantage is communication problems depend on 50 cm long walls.

Plans for the Next Week:

1. We will evaluate these projects to select the most suitable one for Troy Tech. To do that, we will first determine the priority of some criterias(cost, fun, creativity etc.). Each criteria will have a weight in correlation and we will score and scale the projects according to these weighted criterias.

2. We will examine our favorite project in detail and do search about the modules which can be used in that project.

3. We will divide different works into pieces and assign to different members so that we could research in detail and list the options and devices.

4. We will install Sourcetree on our computers to use Github efficiently.