

ITSP Abstract

Project Name : Waypoint Navigation

Team Name : The Awesome Four

Team Members:

<u>Name</u>	<u>Email-Id</u>	<u>Contact No.</u>	<u>Department</u>	<u>Hostel / Room No.</u>
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Project Description :

The project is related to the concept of waypoint navigation using land drones and GPS technology. We intend to make a XLR8 bot and fit it with appropriate sensors to receive wireless GPS signals. The bot will respond by moving automatically to the specified location as given by another object carrying GPS receivers. If we are not able to make such an advanced bot with all the required sensors, then we propose to use a FireBird V bot. This project can be extended to an air drone, if time, money and resources permit !!

Motivation :

We intend to use the power of GPS technology which has such great accuracy. It can be used in targeting systems in the army.

The land drone which we are planning to make can be extended to a water drone & subsequently to an air drone, thus, extending the targeting system to the navy and the air force.

Our decision to take up this project motivated us by the following factors :

1. We will all learn to make a land drone, fitted with sensors, and making it remote/laptop controlled. Three of us had not done XLR8 due to quizzes; and so, we would rather make it up by making an even more advanced bot. If we are not able to make such an advanced bot with all the required sensors, then we

propose to use a FireBird V bot, which can be issued from the ERTS lab, in KReSIT building.

2. We will learn how to use the GPS tracking system and how to obtain the x & y coordinates of an object and how to use them.

Working :

The project comprises of two parts. The first part is creating a land drone preferably a bot which was created in XLR8. The second part is using that bot to perform way point navigation which will be done using GPS technology. This will be done by placing a device, A, on the targeted object which will send GPS signals to a second device, B.

From device B, we intend to send the land drone automatically to the device A using its coordinates. The position of Device A will be visible on Device B. The device B will display the distance between the land drone and device A. The land drone will be targeted to device A, first by rotating the desired angle using the required sensor and then travelling the specified distance which will be provided by the GPS.

Timeline :

Week 1 : Making of the bot and to control its basic motion.

Week 2 : Attaching the required sensors to it and configuring them properly, so that we can use them as per our need.

Week 3 & 4 : Learning the required aspects of GPS Technology, and automating the bot to achieve the desired navigation.

Week 5 & 6 : Improvising the bot further and also as compensation in case of delay in following the timeline.

Components Required :

1. Sensor which converses with the satellites and gives us the required GPS signals.
2. Servo motors to propel the bot in the desired direction with desired speed.
3. Sensors to calculate the distance covered by the bot and also the angle covered by the bot.
4. A remote control or a laptop to automate the bot, most probably x-bee to control the bot.

Estimated Cost :

Less than INR 15000, could not determine the cost of the individual components.

References :

We talked to a senior Kunal Garg, who was working in a similar project.

And as always, internet is the best reference for any information.