Apptics

INTRODUCTION:

Bored of playing games on your Android phone? Want to do something cool with it? Here's a chance to design your own Android controlled robot using the simple ideas of Android App Development, Bluetooth Communication and a pre-built bot model.

PROBLEM STATEMENT:

The problem is to design a Bluetooth enabled Android app to facilitate navigating a robot, barring obstacles to a destination.



Details:

A pre-built bot equipped with Bluetooth will be provided at the time of the event. The app will need to send data to the Bluetooth Module on the bot in the prescribed format.

The format of the message would be P<ocr value of motor A><ocr value of motor B>D<4 bits to control the two motors A and B>.

The OCR value will control the PWM of the motor and thus its speed. It must be from 000-255. Note that the OCR value must of three digits. For eg. 012 instead of 12.

The value of 4 bits will decide the direction of the robot. Refer to the following table for the direction of movement of motor.

| A1 | A2 | Motor A | B1 | B2 | Motor B |
|----|----|---------------|----|----|---------------|
| 0 | 0 | Stop | 0 | 0 | Stop |
| 0 | 1 | Move Forward | 0 | 1 | Move Forward |
| 1 | 0 | Move Backward | 1 | 0 | Move Backward |
| 1 | 1 | Stop | 1 | 1 | Stop |

For eg. P127092D0010 is a valid message whereas P127092D0210 is not.

The participants will have to design the following features of the device:

Compulsory Features:

• Implementation of a simple keypad with four keys to provide respective directions to the bot in Android

• Successful communication between Android app and pre-built bot.

Additional Features:

Apart from the compulsory features, various additional features can be added to the circuit like

- Implementation of various other directions.
- Controlling the speed of the bot.
- Using motion sensors of Android Phone to control the bot.

These are just some of the additional features. Apart from these, any other innovative additional features can be implemented.

RULES AND REGULATIONS

Eligibility & Team structure

- Students belonging to any batch or program are eligible.
- Team strength should not exceed 3.
- There are no restrictions on number of teams from a pool. Though all members of a single team should belong to the same pool.

General Rules

- Use of pre-built apps is not allowed. You must provide the source code of the app developed.
- The software written should be original and not copied from any other source. You can however use libraries.
- Judges decision shall be final and binding on all.
- Judging shall be subjective.
- All of the above rules may be subject to change as they deem fit. Change in rules, if any will be highlighted on the following links:

Electronics Club Website: http://students.iitk.ac.in/eclub/

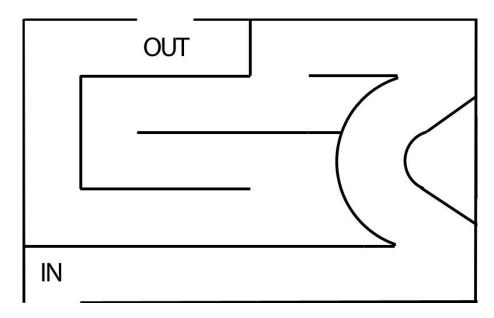
Takneek Website: http://students.iitk.ac.in/takneek/2012/

JUDGING CRITERIA

Judging shall be done on basis of:

• Time Taken by the bot to navigate the path.

The bot will have to navigate the following arena without touching the walls. A penalty of 5 secs would be implemented each time the bot touches the walls of the arena.



Each team will be given two runs and the best time would be considered. The team coming first would be awarded 100% of the marks allocated, teams coming within 10% of the best time would be awarded 90% of the total marks allocated and so on.

- User Interface
- Ease in communication
- Layout of App
- Extra features implemented.

Judges would be faculty of Department of Electrical Engineering, IIT Kanpur and/or senior members of the Electronics Club.

POINTS DISTRIBUTION

| Parameter | Weightage (%) |
|----------------------------|---------------|
| Time Taken | 30 |
| User Interface | 20 |
| Ease in Communication | 10 |
| Layout of App | 15 |
| Extra Features Implemented | 25 |

CONTACTS



Anurag Dwivedi 156 / Hall 2 anuragdw@iitk.ac.in 8960482723



Nikhil Gupta 138 / Hall 3 nikgupta@iitk.ac.in 9005671866



Rudra Pratap Suman F107 / Hall 5 rpsuman@iitk.ac.in 9450003098