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Controlling the Robots by Mobile

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Abstract: *This paper describes how to control the robots by using mobile communication technologies such as DTMF, Wireless LAN. We found that most mobile robot controllers have been developed using C/C++and the software used for this controller is arduino software. It is because C/C++ has powerful extensions that the unit type information can be added within the language with concepts such as overloading and templates. Concerning future work, the best solution and programming language will be chosen on this mobile controlled robotics project*

Keyword: *wireless, decoder, dual tone multi frequency, arduino board.*

INTRODUCTION

Mobile controlled robots are used for various human and science application. The robot can do the human assisting work like drive, walk, swim or fly. Mobile controlled robots can be controlled from anywhere by using codes which can be made by our own [1]. Therefore, various electronic device used to control this robot is DTMF IC (dual tone multi frequency), microcontroller. The human can do two works from different places simultaneously with the help of mobile controlled robots. The human need not to be present there for controlling the robot, this reduce his risk. Industries use mobile controlled robots to improve the business such as manufacturing and security. Mobile controlled robot are rather complex systems that have to deal with a number of tasks in order to allow the robot to operate autonomously. The Android API allows easy access to the hardware components. Controlling the robotics use the numerous communication interfaces like WiFi, Bluetooth, USB, and the integrated sensors. Model driven software development, code generation, test based development are some of the needs for our robotics related courses focused by software engineer.

Arduino Software

Arduino is an open source prototyping platform used to upload the c/c++ code to the microcontroller for controlling the robot. Arduino boards are able to read like sensor, button and produce an output like LED, running motor. You can give a set of instruction to the microcontroller contained in the board so that you can control the robots by using mobiles. Arduino software is easy to use for beginners and it is also flexible for advanced user [2]. Arduino software runs on some operating system like Linux, windows, mac. Most microcontroller are limited to windows.

Dual Tone Multiple Frequency

In this mobile controlled robot project, we need two mobile phones. Where one is connected and attached to the robot and another one is handled by user. When user mobile makes a call to another mobile which is attached to the robot. The mobile attached to the robot is received by the auto answer- mode .If any button is pressed, a tone corresponding to the button pressed which is heard at the

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other end of the call. The received tone is processed by microcontroller [4] with the help of decoder. When the user presses a button on his handset, the tone that is generated is decoded by the DTMF decoder. Then the command is passed to the microcontroller which is preprogrammed. The microcontroller then passes the command to robot for motion [3].

Figure 1. mobile controlled robot

Table 1 DTMF Decoded Frequency Output Table

Button	Low DTMF frequency (Hz)	High DTMF frequency (Hz)	Binary coded output			
			Q1	Q2	Q3	Q4
1	697	1209	0	0	0	1
2	697	1336	0	0	1	0
3	697	1477	0	0	1	1
4	770	1209	0	1	0	0
5	770	1336	0	1	0	1
6	770	1477	0	1	1	0
7	852	1209	0	1	1	1
8	852	1336	1	0	0	0
9	852	1477	1	0	0	1
0	941	1336	1	0	1	0
*	941	1209	1	0	1	1
#	941	1477	1	1	0	0

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Conclusion

If we use bluetooth device for mobile controlled robots, it can be applicable only for shortest distance. But we use DTMF technology we control the robots from anywhere by using mobile phones.

References

1. Saliyah Kahar, Riza Sulaiman, Suziyanti Marjudi," Development on Mobile Robot Controller by using High Level Language Programming: a Review" International Journal of Computer Applications (0975 – 8887) Volume 45– No.10, May 2012
2. Johann Borenstein, oram Koren "Motion Control Analysis of a Mobile Robot" Transactions of ASME, Journal of Dynamics, Measurement and Control, Vol. 109, No. 2, pp. 73-79
3. Stephan Gobel, Ruben Jubeh, Simon-Lennert Raesch and Albert" Using the Android Platform to control Robots"
4. http://www.innoc.at/fileadmin/user_upload/_temp_/RiE/Proceedings/65.pdf.
5. Lemuel Uitzil , Michel García , Cinhtia González , Sergio González, "Wireless security system implemented in a mobile robot" International Journal of Computer Science Issues, Vol. 9, Issue 4, No 3, July 2012.

Cite this article as: V Anusuya, M Theivanayagi, P Mayil Vel Kumar, J K Kiruthika, S Umadevi. "Controlling the Robots by Mobile". *International Conference on Systems, Science, Control, Communication, Engineering and Technology 2016*: 973-975. Print.