



A New Approach to Monitor and Control of JCB Using Mobile Phone

Ramchandra K Gurav¹, Rohan B Patil², Nanaware Subodh³

Assistant professor, Dept. of E&TC, Dr. Daulatrao Aher College of Engineering, Karad, Maharashtra, India¹

UG Student Dept. of E&TC, Dr. Daulatrao Aher College of Engineering, Karad, Maharashtra, India²

UG Student Dept. of E&TC, Dr. Daulatrao Aher College of Engineering, Karad, Maharashtra, India³

ABSTRACT: A JCB is a typical hydraulic heavy-duty human-operated machine used in general versatile construction operations, such as digging, ground levelling, carrying loads, dumping loads and straight traction. However, there are many tasks, such as hazard environment (nuclear decomposition, earthquake, etc.) which is not suitable for human to work on site. The remotely controllable JCB are required to work in such environment. In this paper, we are trying to implement a system through which we can control crane remotely through mobile phones in short without manual driver we can control the operation of crane. Currently in risky areas if we want to work with crane then driver is in risk so by considering this current scenario we have decided to work on remote controlling & monitoring of crane using Zigbee technology & DTMF decoder along with sensing camera.

KEYWORDS: JCB, Remote monitoring, ZigBee, DTMF Decoder, Sensing Camera

I. INTRODUCTION

Basic objective of this paper is to monitoring & controlling of JCB remotely by using mobile phone. In this we are focussing on Zigbee technology for wireless communication. Currently there is so much work has been done on wireless remote monitoring & controlling [1]. Presently we are facing problems in risky areas work with JCB because we have to take risk with the driver of JCB so to overcome this problem we are trying to implement the above mentioned idea. Crane also can be monitored & controlled through mobile [2]. Three modes we want to focus more in this paper that are Monitoring JCB location, deciding desired Operation & sending control signal to the JCB. Live monitoring can be takes place with the help of camera which is placed at JCB location.

II. RELATED WORK

Mobile Operated Spy Robot(Spy Robot) [1] we saw that how the robot is used to the security and surveillance purposes which helps the humans from the exposure to potentially dangerous situations. The objective of designing this robot is simply to facilitate the humans in the future for security purposes. In the present scenario, there are many recent developments of robotics and communication on a large scale. The robot is in the form of a vehicle mounted with a web cam, which acquires and sends pictures PC. The movement of vehicle is controlled by microcontroller. Our idea is to make a robot to tackle the hostage situation & the worst conditions which cannot be handled by human being. Hence Humans are moved out from direct exposure to potentially dangerous situations. Robotic system can perform many security and surveillance functions more effectively than humans. The Keil micro software vision is used for writing Assembly level program code to the robot and for transferring the hex files to microcontroller.

Controlling of Crane by the mobile phone using PLC and the DTMF technology [3]. This paper was highly efficient in the Industrial Environment. We here by present controlling of cranes, using Dual Tone Multi Frequency (DTMF) technology. The crane is controlled by a mobile phone that makes a call to another mobile phone attached to the crane's control panel. During the call, if any button is pressed, tone corresponding to that button is heard at the other end of the call. This tone is received through headset which is subsequently used to relay the commands to a Programmable Logic Controller (PLC) that would perform switching action of motors, connected to the moving parts of the crane. With advantages of simplicity, audibility, cost effectiveness & unlimited range the hypothesis is that DTMF could replace Radio Frequency (RF) in simple communications. This paper proposes other application areas, such as Industrial environments, where DTMF is feasible and would be advantageous over RF. In this fashion,

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direction of motion of the crane can be remotely controlled by a mobile phone by DTMF technology via Global System for Mobile communication (GSM).

III. BLOCK DIAGRAM OF PROPOSED SYSTEM

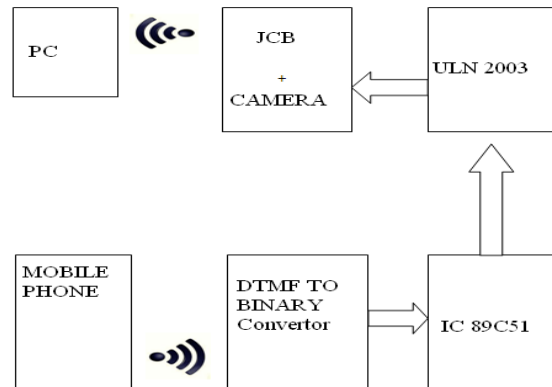


Fig. 1 System Block Diagram

The above circuit diagram shows circuit diagram of proposed system. Camera is placed at JCB location we can have more camera as per our requirement to monitor JCB position & its environments. The continuous monitoring we can do on PC which is located at remote location. ZigBee Module placed on JCB which will work as a receiver. So the function is starting from camera. We monitor position of JCB on PC and deciding our desired task. After deciding our task we can send appropriate signal to JCB. In this paper we are using 2 Button for UP motion of JCB, 8 for down, 4 for left & 6 for right. DTMF decoder will decode the signal & sent it to JCB. At JCB the ZigBee receives the desired signal & operation of JCB takes place as per instruction.

Here we use 40 pins ATMEL series microcontroller IC having 4 port and each port has 8 bit any port is possible to use as a input or output port. The current obtain from microcontroller IC89c51 is not sufficient to drive relay. Therefore for relay driving IC ULN 2003 is used. It is use to control supply of gear motor, water pump as sprinkler.

IV. HARDWARE REQUIREMENT

We are basically using cell phone for wireless receiver. The speaker wire is head phone connect to the input of DTMF to binary converter. DTMF IC 8870 used as a binary converter. Microcontroller used is 89C51/52, ULN 2003 ULN2003 belongs to the family of ULN200X series of ICs. Different versions of this family interface to different logic families. ULN2003 is for 5V TTL, CMOS logic devices. These ICs are used when driving a wide range of loads and are used as relay drivers, display drivers, line drivers etc. ULN2003 is also commonly used while driving Stepper Motors. Wireless Camera for continuous monitoring.

V. SOFTWARE REQUIREMENT

The Kiel μ Vision 4 is the software used for the programming of 89C51. Keil C51 C Compiler for the 8051 microcontroller is the most popular 8051 C compiler in the world. It provides more features than any other 8051 C compiler available today. The C51 Compiler allows you to write 8051 microcontroller applications in C that, once compiled, have the efficiency and speed of assembly language. Language extensions in the C51 Compiler give you full access to all resources of the 8051. The C51 Compiler translates C source files into reloadable object modules which contain full symbolic information for debugging with the μ Vision Debugger or an in-circuit emulator. In addition to the object file, the compiler generates a listing file which may optionally include symbol table and cross reference information. Flash Magic is most important software which is used to burning and execution of program. Proteus software used for the design circuit as well as run circuit and checks and detect error.



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VI. CONCLUSION AND FUTURE SCOPE

DTMF Decoder are one of the IC the dual tune multiple frequency which is receive from controller cell phone to controlling crane is easy. In present paper we have used wired camera so we are getting limitations for distance so instead of this wired camera if we wireless camera then performance can be more superior.

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