Design and Implementation of Industrial Robot by the use of Embedded Remote Control System

Vaishnavi Sundar[#1],P.J. Hsrini[#2],C.S. Sujai[#3],Mrs.K.Subbulakshmi[*4]

[#]*Final year, B.Tech/ECE, Bharath University*
[1]vaishnavi.sundar@gmail.com
[2]parimalaharini@gmail.com
[3]itsmesujai@gmail.com

[*]*Assitant Professor, Bharath University*
[4]k_sudha51@yahoo.com

ABSTRACT - **This paper proposes a C/S (client and server) model to resolve the matter of dominant industrial robots remotely. It makes a short description of the C/S model framework so constructs server and shopper supported the Staubli industrial robots and ATMEL platform severally. The main aim of our project is to regulate the movements of golem and crush the aluminum material by remote. Here we tend to use the Bluetooth wireless technology for that dominant wireless. By this project we are able to act with robotic system through Bluetooth wireless technology from remote setup, we are able to send command to regulate our golem movements from anyplace wherever we are able to use a far off. The computer code for the microcontroller is written victimization embedded C. The compiler used for hex code generation is keil compiler. The remote section uses ATMEL processor and for security and simple access of bit screen and Bluetooth device.**

I. INTRODUCTION

Embedded systems are used for different application namely in consumer, industrial, commercial and military applications. Embedded Wi-Fi modules provide a simple means of wirelessly enabling any device which communicates via a serial port. Embedded systems are designed in such a way that to do some specific task, which cannot be performed by general-purpose computer that performs multiple tasks operations. An automaton, may be a machine designed to try and do an individual's job (excluding analysis robots) that's tedious, slow or dangerous. It's solely comparatively recently that robots have began to use a degree of AI (AI) in their work - several robots needed human operators, or precise steerage throughout their missions. Slowly, robots have become a lot of and a lot of autonomous. Embedded Technology predominates because it overcomes the drawbacks of all the prevailing mechanical and electronic systems.

Fig 1: e-con Systems eSOM270 & eSOM300 Computer on Modules

II. BLOCK DIAGRAM AND RELATED WORK

This project is to help the industry that does works with the help of human. This robot will help the industry workers to save time. We are going to implement this project in industries and check the process of our robot. This is going to be a time conserving project and cost efficient one.

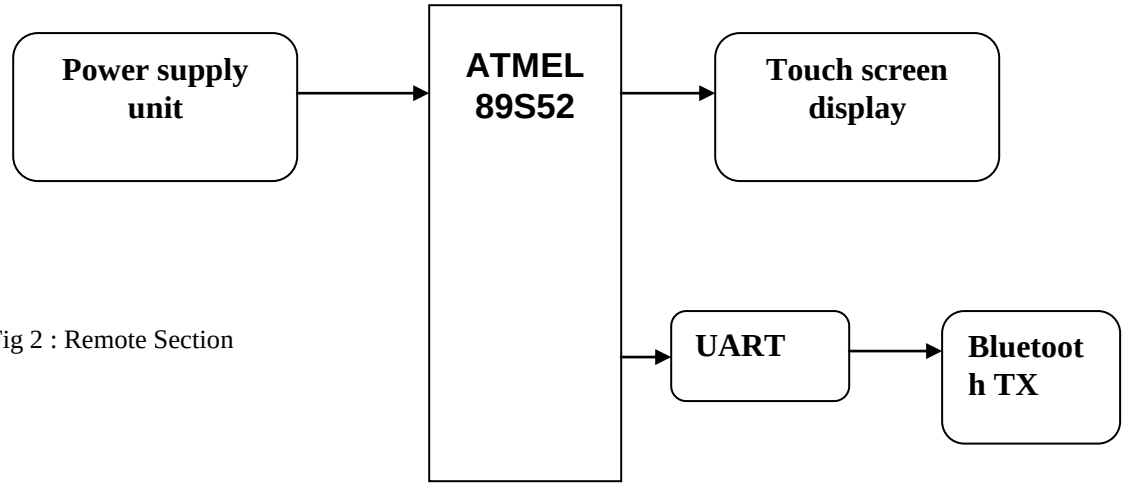

Fig 2 : Remote Section

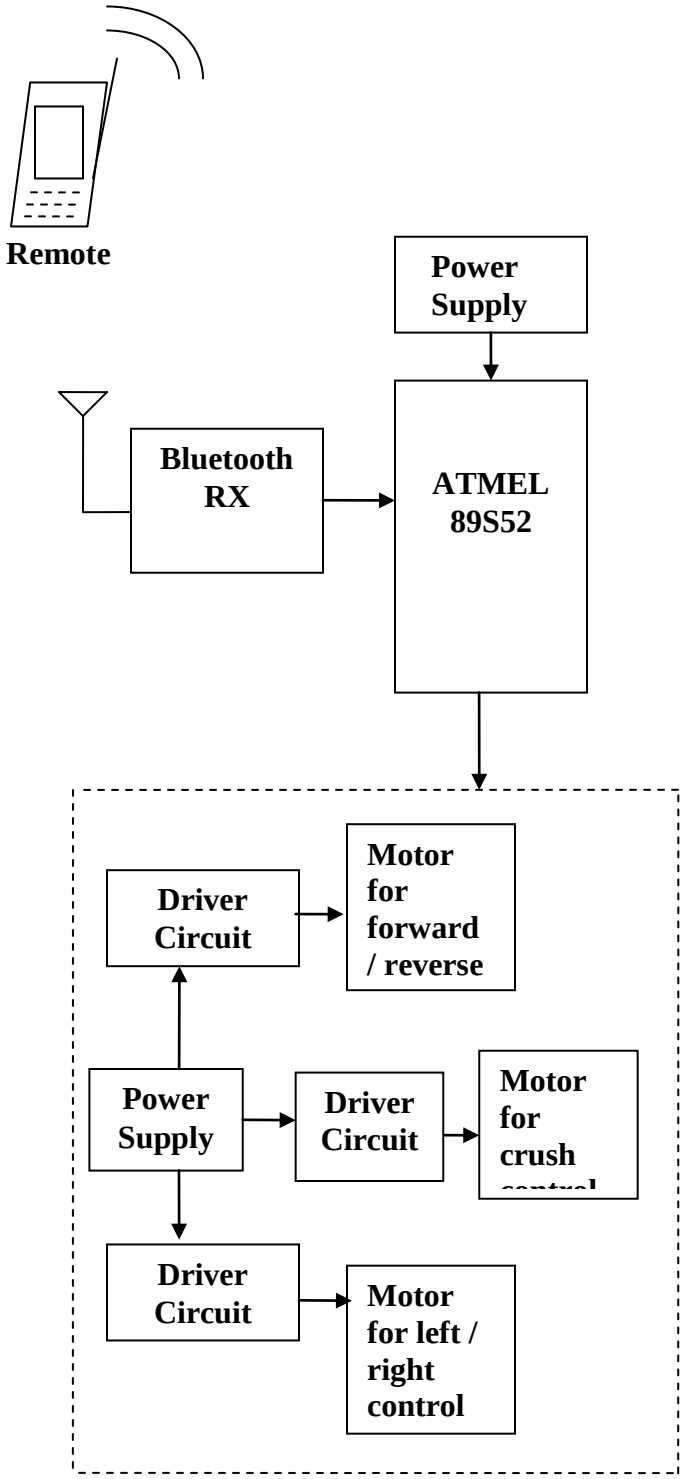

Fig 3: Robot Section

III. POWER SUPPLY

Power provides may be relevance a supply of power. A tool or system that provides electrical or alternative forms of energy to associate output load or cluster of masses is termed an influence provides unit or PSU. The term is most ordinarily applied to current provides, less typically to mechanical ones, and infrequently to others. A 230v, 50Hz Single part AC power provide is given to a step down electrical device to urge 12v provide. This voltage is reborn to DC voltage employing a Bridge Rectifier. The reborn pulsing DC voltage is filtered by a 2200uf electrical condenser and so given to 7805 transformer to get constant 5v provide. This 5v provide is given to any or all the elements within the circuit. A RC time constant circuit is value-added to discharge all the capacitors quickly. To confirm the ability provide a LED is connected for indication purpose.

IV. BLUETOOTH CONNECTION IN THE MODULE

Bluetooth is a wireless technology standard for exchanging data over short distances (using short-wavelength radio transmissions in the ISM band from 2400–2480 MHz) from fixed and mobile devices, creating personal area networks (PANs) with high levels of security. It is having inbuilt AT commands. At that initialize time, we have to pair with mobile phone by using AT commands. It is having following four terminals Vcc, Gnd, Rx and Tx.By using TX and Rx pins we can externally interconnect with microcontroller.

V. MICROCONTROLLER

The AT89S52 could be a low-power, superior CMOS 8-bit microcontroller with 8K bytes of in-system programmable non-volatile storage. The device is factory-made victimization Atmel's high-density non volatilizable memory technology and is compatible with the Indus-try-standard 80C51 instruction set and pin out. The on-chip Flash permits the program memory to be reprogrammed in-system or by a standard non volatilizable memory pro-grammar. By combining a flexible 8-bit hardware with in-system programmable Flash on a monolithic chip, the Atmel AT89S52 could be a powerful microcontroller that provides a highly-flexible and cost-efficient resolution to several embedded management applications. The AT89S52 provides the subsequent customary features: 8K bytes of Flash, 256 bytes of RAM, thirty two I/O lines, Watchdog timer, 2 knowledge pointers, 3 16-bit timer/counters, a six-vector two-level interrupt design, a full duplex port, on-chip generator, and clock electronic equipment. Additionally, the AT89S52 is intended with static logic for operation right down to zero frequency and supports 2 software system selectable power saving modes. The Idle Mode stops the hardware whereas permitting the RAM, timer/counters, port, and interrupt system which helps to control the function of the system. The contents of RAM can be saved by Power-down mode but however it freezes the generator, disabling all alternative chip functions till consecutive interrupt or hardware reset.

The features of microcontroller are as follows

- Compatible with MCS®-51 Products
- 8K Bytes of In-System Programmable (ISP) Flash Memory Endurance: 1000 Write/Erase Cycles
- 4.0V to 5.5V Operating Range
- Fully Static Operation is in a range of0 Hz to 33 MHz
- Three-level Program Memory Lock
- 256 x 8-bit Internal RAM
- 32 Programmable I/O Lines
- Three 16-bit Timer/Counters
- Eight Interrupt Sources
- Full Duplex UART Serial Channel
- Low-power Idle and Power-down Modes
- Power-down Mode is used to recover the interrupt
- Watchdog Timer
- Dual Data Pointer
- Power-off Flag
- Fast Programming Time

- Flexible ISP Programming (Byte and Page Mode)
- Green (Pb/Halide-free) Packaging Option

VI.SYSTEM ANALYSIS

Here we analyze the robot to pick the mesh and crush into required shape. The aluminum mesh of thickness 0.2mm will be given to the robot, whose first action would be to pick the mesh and then crush into an oval shape, then drop into a basket. The next action will be to pick the basket and drop in the concerned place. The instructions to the robot will be given through a Bluetooth medium.

VII. CONCLUSION

The software and hardware analysis of a robot using Bluetooth module is seen in this project. This is applied in a real time for industries to conserve time and get accuracy in the product. This project would be highly useful for the industries that manufacture air filters that are used in automobiles. This would be a cost-efficient project of this sector.

REFERENCES

[1] "Force Sensing Robot Fingers using Embedded Fiber Bragg Grating Sensors and Shape Deposition Manufacturing".

[2] " Data efficient generalization of robot skills with contextual policy search"

[3] G.Bourhis, O.Horn, A Pruski "An autonomous vehicle for people with Motor disabilities "IEEE Robotics & automation magazine" ,VOL.8.pp.20-8-2001

[4] "Development of Autonomous Robotic wheelchair controller using Embedded system"

[5] "Human-robot cooperative sweeping using commands embedded in actions"

[6] " Force Sensing Robot Fingers using Embedded Fiber Bragg Grating Sensorsand Shape Deposition Manufacturing"