

Logistic Transportation Robot System with Fork Using IOT

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Abstract- The main aim of this project is robot to lift the load and placing it in forward or backward. The Robot can be moved in two directions (front and back) through predefined keys assigned in the android application.

The controlling device of the robot system is arduino Microcontroller. Android mobile with blue tooth, Bluetooth module, DC motors are interfaced to arduino Micro controller. The controlling device for the robotic controlling in the project is a arduino Microcontroller. The data sent from Android mobile phone over blue tooth will be received by Bluetooth module connected to arduino Microcontroller. Microcontroller reads the data and decides the direction and operates the DC motors connected to it accordingly. The system also controls the load. To perform this intelligent task, Microcontroller is loaded with a program written in embedded 'C' language.

EMBEDDED SYSTEMS

An embedded system is a computer system designed to perform one or a few dedicated functions often with real-time computing constraints. It is embedded as part of a complete device often including hardware and mechanical parts. By contrast, a general-purpose computer, such as a personal computer (PC), is designed to be flexible and to meet a wide range of end-user needs. Embedded systems control many devices in common use today. Embedded systems are controlled by one or more main processing cores that are typically either microcontrollers or digital signal processors (DSP). The key characteristic, however, is being dedicated to handle a particular task, which may require very powerful processors. For example, air traffic control systems may usefully be viewed as embedded, even though they involve mainframe computers and dedicated regional and national networks between airports and radar sites. (Each radar probably includes one or more embedded

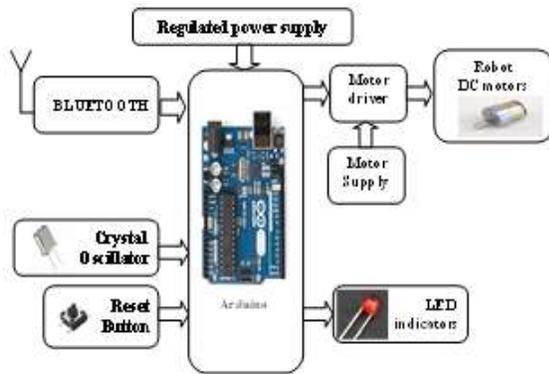
systems of its own.) Since the embedded system is dedicated to specific tasks, design engineers can optimize it to reduce the size and cost of the product and increase the reliability and performance. Some embedded systems are mass-produced, benefiting from economies of scale. Physically embedded systems range from portable devices such as digital watches and MP3 players, to large stationary installations like traffic lights, factory controllers, or the systems controlling nuclear power plants. Complexity varies from low, with a single microcontroller chip, to very high with multiple units, peripherals and networks mounted inside a large chassis or enclosure. In general, "embedded system" is not a strictly definable term, as most systems have some element of extensibility or programmability. For example, handheld computers share some elements with embedded systems such as the operating systems and microprocessors which power them, but they allow different applications to be loaded and peripherals to be connected. Moreover, even systems which don't expose programmability as a primary feature generally need to support software updates. On a continuum from "general purpose" to "embedded", large application systems will have subcomponents at most points even if the system as a whole is "designed to perform one or a few dedicated functions", and is thus appropriate to call "embedded". A modern example of embedded system

HISTORY

In the earliest years of computers in the 1930–40s, computers were sometimes dedicated to a single task, but were far too large and expensive for most kinds of tasks performed by embedded computers of today. Over time however, the concept of programmable controllers evolved from traditional

electromechanical sequencers, via solid state devices, to the use of computer technology. One of the first recognizably modern embedded systems was the Apollo Guidance Computer, developed by Charles Stark Draper at the MIT Instrumentation Laboratory. At the project's inception, the Apollo guidance computer was considered the riskiest item in the Apollo project as it employed the then newly developed monolithic integrated circuits to reduce the size and weight. An early mass-produced embedded system was the Autonetics D-17 guidance computer for the Minuteman missile, released in 1961. It was built from transistor logic and had a hard disk for main memory. When the Minuteman II went into production in 1966, the D-17 was replaced with a new computer that was the first high-volume use of integrated circuits.

HARDWARE ARCHITECTURE



The main blocks of this project are:

- Regulated power supply.
- ARDUINO Micro controller.
- Fire sensor.
- Relay with driver.
- Bluetooth module.
- Reset Button.
- Crystal oscillator.
- LED indicator.

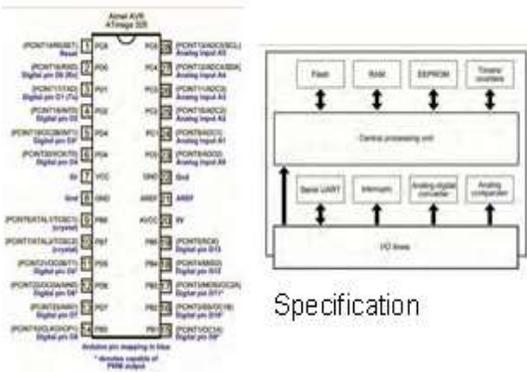
ATMEGA328

Features

- High Performance, Low Power AVR® 8-Bit Microcontroller
- Advanced RISC Architecture
 - 131 Powerful Instructions

- Most Single Clock Cycle Execution
- 32 x 8 General Purpose Working Registers
- Fully Static Operation
- Up to 20 MIPS Throughput at 20 MHz
- On-chip 2-cycle Multiplier
- High Endurance Non-volatile Memory Segments – 4/8/16/32K Bytes of In-System Self
 - -Programmable Flash program memory (ATmega48PA/88PA/168PA/328P)
 - 256/512/512/1K Bytes EEPROM (ATmega48PA/88PA/168PA/328P)
 - 512/1K/1K/2K Bytes Internal SRAM (ATmega48PA/88PA/168PA/328P)
 - Write/Erase Cycles: 10,000 Flash/100,000 EEPROM 20
 - Data retention: 20 years at 85°C/100 years at 25°C(1)
 - Optional Boot Code Section with Independent Lock Bits In-System Programming by On-chip Boot Program True Read-While-Write Operation
 - Programming Lock for Software Security
- Peripheral Features
 - Two 8-bit Timer/Counters with Separate Prescaler and Compare Mode
 - One 16-bit Timer/Counter with Separate Prescaler, Compare Mode, and Capture Mode
 - Real Time Counter with Separate Oscillator
 - Six PWM Channels
 - 8-channel 10-bit ADC in TQFP and QFN/MLF package Temperature Measurement
 - 6-channel 10-bit ADC in PDIP Package Temperature Measurement
 - Programmable Serial USART
 - Master/Slave SPI Serial Interface
 - Byte-oriented 2-wire Serial Interface (Philips I2C compatible)
 - Programmable Watchdog Timer with Separate On-chip Oscillator
 - On-chip Analog Comparator
 - Interrupt and Wake-up on Pin Change
- Special Microcontroller Features
 - Power-on Reset and Programmable Brown-out Detection

- Internal Calibrated Oscillator 21
- External and Internal Interrupt Sources
- Six Sleep Modes: Idle, ADC Noise Reduction, Power-save, Power-down, Standby, and Extended Standby
- I/O and Packages
 - 23 Programmable I/O Lines
 - 28-pin PDIP, 32-lead TQFP, 28-pad QFN/MLF and 32-pad QFN/M
- Operating Voltage:
 - 1.8 - 5.5V for ATmega48PA/88PA/168PA/328P
- Temperature Range:
 - -40°C to 85°C
- Speed Grade:
 - 0 - 20 MHz @ 1.8 - 5.5V
- Low Power Consumption at 1 MHz, 1.8V, 25°C for ATmega48PA/88PA/168PA/328P:
 - Active Mode: 0.2 Ma
 - Power-down Mode: 0.1 µA
 - Power-save Mode: 0.75 µA (Including 32 kHz RTC)



FUTURE SCOPE

Our project “Logistic Robot Fork” is mainly intended to designing a Robot which is controlled through Android phone over Bluetooth. We can extend this project by introducing Wi-Fi in the project so that the distance of communication will be more in case of Wi-Fi. By connecting wireless camera to the robot, then we can see the outer world from our personal computer

only by using GPRS and GPS. We can use this robot at so many fields and we can use to handle so many situations.

By connecting bomb detector to the robot, we can send it to anywhere i.e (battle field, forests, coal mines, to anyplace) by using our personal computer and we can able to detect the bomb at field, here sensor detects the bomb and gives information to micro controller and it gives the information to transceiver and it sends the information to the personal computer.

By connecting temperature sensor to the robot we can get the temperature of dangerous zones in personal computer itself instead of sending human to there and facing problems at field we can send robot to there and sensor will detect the temperature and it gives information to the micro controller and micro controller gives the information to the transceiver from that we can get the data at pc side. By connecting smoke sensor to the robot we can get the information related concentration of smoke or gases in respective field’s i.e. (coal mines, dangerous zones, etc). sensor sense the information and it give to the micro controller and it gives to the transceiver and from that we get the information in personal computer.

By connecting corresponding instruments to the robot we can use it in agriculture for farming purpose. This robot can move either forward and backward and left and right depend upon our instructions so we can do some part of agriculture from pc only by using robot.

By connecting firing instrument and wireless camera to the robot we can fire the target from pc. Here by using camera we can see the opposite target and we can fire the target from personal computer by pressing selected button and we can easily handle the situations like Mumbai terrorist’s attack without loss of human life’s and we can decrease our soldiers effort too

CONCLUSION

Integrating features of all the hardware components used have been developed in it. Presence of every module has been reasoned out and placed carefully, thus contributing to the best working of the unit. Secondly, using highly advanced IC’s with the help of growing technology, the project has been successfully implemented. Thus the project has been successfully designed and tested

REFRESENCES

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- [3] www.microchip.com
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