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Crawler Bot

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***Abstract*— Among the many justifications for using robotics, the most important is to shield people from working in dangerous environments and from handling hazardous materials. From dealing with chemicals that are explosive to handling radioactive substances. The main objective of this project is to minimize human causalities in tragedies. This robot is remotely controlled; self powered and has all the controls like normal car which are controlled by a microcontroller unit. A wireless camera has been installed on it, so that it can monitor surroundings remotely when required. An obstacle sensor is used protect the robot from collision.**

***Keywords*- DTMF, ARM7, Motor drivers, Sensors, DTMF decoder, Wi-Fi Module..**

I. INTRODUCTION

This robot is controlled by android and it has sensors like IR (Infrared Sensor) for obstacle detection and also temperature sensor. A wireless camera has been installed on it, so that it can monitor remotely when required. It can enter into even those areas where a human cannot reach and send us all the information through its tiny Camera eyes. This spy robot can be used in star hotels, shopping malls, jeweler showrooms, etc where there can be threat from intruders since human life is always precious, and those robots are the replacement Among the many justifications for using robotics, the most important is to shield people from working in dangerous environments and from handling hazardous materials. From dealing with chemicals that are explosive to handling radioactive substances.Robots are ideal for use in hazardous environments by removing people from direct exposure to unfriendly conditions such as materials that are radioactive or highly explosive. Wireless camera will send real time video and audio signals which could be seen on a remote monitor and action can be taken accordingly.

II.OVERVIEW OF EXISTING SYSTEM

- There is much advancement in the field of engineering robotics in particular many robotics systems have been developed for various purposes there are certain systems which are used for automatic motion of vehicles in road and wheel chairs which can help disabled
- Drones can also be used for rescue systems but drones are noisy and consume more power.
- For transmitting audio and video, RF camera has been used.
- RS 232 is used for interfacing at transmitting and receiving end.

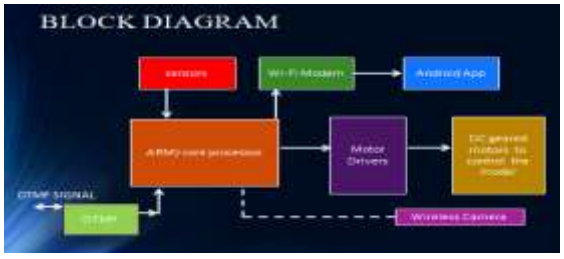
III. OVERVIEW OF PROPOSED SYSTEM

Robot unit:

- This unit is placed on the robot. It has mainly 4 parts:
- Microcontroller: It is the heart of the device. It controls all the activities of the unit.
- Sensors: sensors like obstacle detection are installed on the unit to get different environment parameters.
- Trance-receiver: This unit communicates between the unit and the base station.
- Motor drivers and motors: Motors are used for movement of robot i.e. Left, Right, Forward, Backward & to point the laser gun.
- Wireless camera: This is a CCTV camera which is used to monitor surrounding environment conditions.
- Wi-Fi modem-To give the notifications and alerts to the rescue team

Base Unit

- This unit is present in base station. This can be a computer system or a remote controller with a display unit.
- The robot movements and surrounding conditions are continuously controlled and monitored by the operator.



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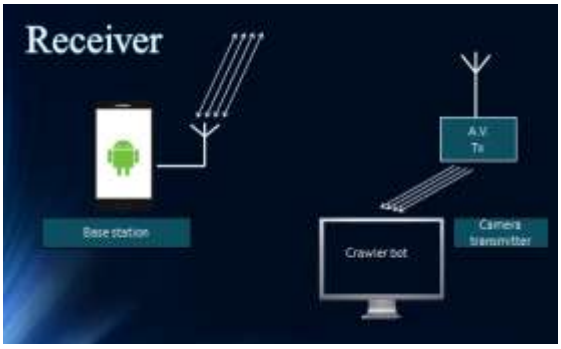
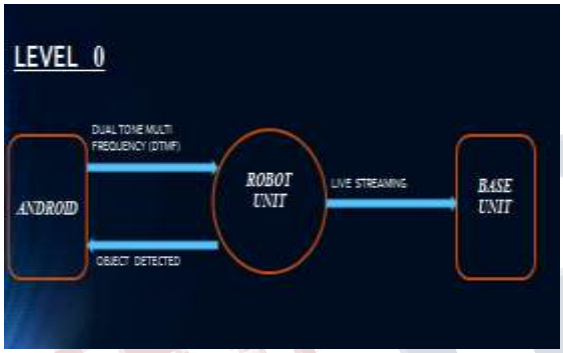


Fig 2: Proposed System Block Diagram

DATAFLOW DIAGRAM



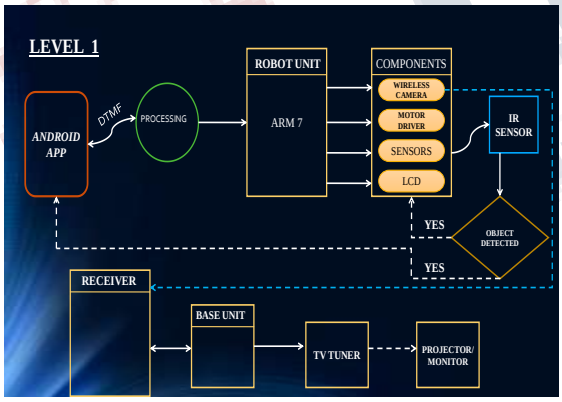


Fig 3: Dataflow Diagram level 0 & 1.

DTMF signal is sent to the DTMF decoder through mobile phone keypad and then those signals are in the form of DTM frequency.
So decode these signals we need DTMF decoder, decoder will decode the signals and then it will send to ARM7 and from ARM7 signals are passed to the motor driver.

SYSTEM ARCHITECTURE

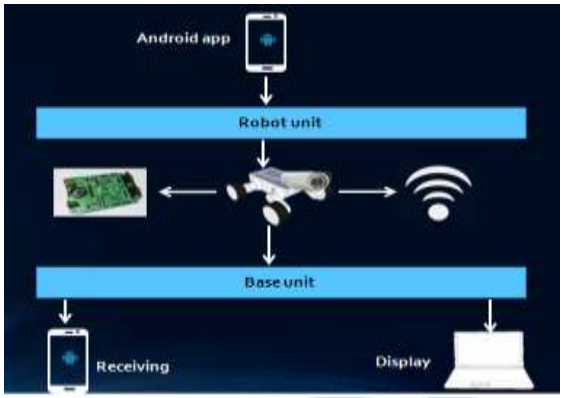


Fig 4: System Architecture

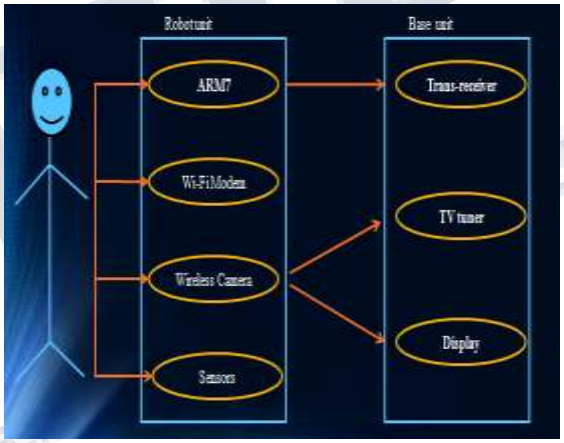


Fig 5: Sequence Diagram

IV.COMPONENT AND SOFTWARE

Hardware

- ARM7 CORE processor (for firmware storage and logic), LPC2148 or lpc 2148
- Appropriate LED's, diodes, resistors, relays, capacitors etc.
- Power supply for the unit
- Relay driver
- LCD display
- Wireless Trance-receiver unit
- obstacle detector
- Wi-Fi-modem

Software

- Android studio
- KEIL IDE.
- Philips Utility.
- Embedded C

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V.CONCLUSION

- In our project, the robot is designed to move by our command and also by its own according to the command given by the program.
- The video and audio are monitored at the control unit.
- In this prototype project, we design in such a way that this robot can be moved anywhere and it can get the information of particular place.
- It is easy to detect any faults or dangerous in the industry. It leads easy process without interaction of human.
- An alerting message will be sent to a prescribed SIM using GSM module.
- This project is very much useful in the places where a human cannot go into the places like ground canals, smoke oriented caves and this project is very much useful in such situations.

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