Voice operated Intelligent Fire extinguisher vehicle

The project aims at designing an intelligent voice operated fire extinguishing robotic vehicle which can be controlled wirelessly through RF communication. The Robotic vehicle has a camera mounted on it whose direction can also be controlled using voice commands. The proposed vehicle has a water jet spray which is capable of sprinkling water. The sprinkler can be moved towards the required direction.

The advent of new high-speed technology provided realistic opportunity for new robot controls and realization of new methods of control theory. This technical improvement together with the need for high performance robots created faster, more accurate and more intelligent robots using new robots control devices, new drivers and advanced control algorithms. This project describes a new economical solution of robot control systems. The presented robot control system can be used for different sophisticated robotic applications.

Speech is the primary and most convenient means of communication between humans. Whether due to technological curiosity to build machines that mimic human's or desire to automate work with machine, research in speech recognition as a first step towards human-machine communication. Speech recognition is the process of recognizing the spoken word to take necessary actions accordingly.

The controlling devices of the whole system are Microcontrollers. Speech recognition module, wireless transceiver modules, obstacle detector, lamp, water jet spray, DC motors and buzzer are interfaced to Microcontroller. When the user fed the voice commands to the speech recognition module, the microcontroller interfaced to it reads the command and sends relevant data of that command wirelessly using transceiver module. This data is received by the transceiver module on the robotic vehicle and feds it to microcontroller which acts accordingly on motors, pump and lamp. The vehicle is mounted with a camera which helps in viewing the live images on TV. Also, the vehicle is capable of detecting obstacles and alerts the user through buzzer. To perform this

intelligent task, Microcontroller is loaded with a program written in embedded 'C' language.

The main objectives of the project are:

1. Construction of speech based intelligent fire extinguisher vehicle system.
2. Live images feed back through wireless video camera.
3. Obstacle detection capability.
4. Night vision capability.

The project provides the following learning's:

1. Speech recognition module operation.
2. Interfacing of transceiver modules to Microcontroller.
3. DC motors working and need for motor driver.
4. Interfacing Speech recognition module to Microcontroller
5. Obstacle detector characteristics.

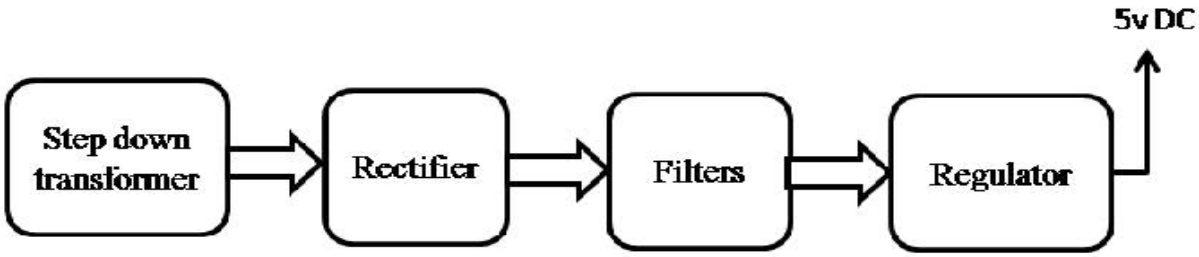
The main building blocks of the project are:

1. Regulated Power Supply.
2. Microcontrollers.
3. Speech recognition module.
4. Wireless Transceiver modules.
5. DC motors with driver.
6. Obstacle detector.
7. Night vision lamp
8. Crystal oscillator.
9. Reset.
10. LED indicators.

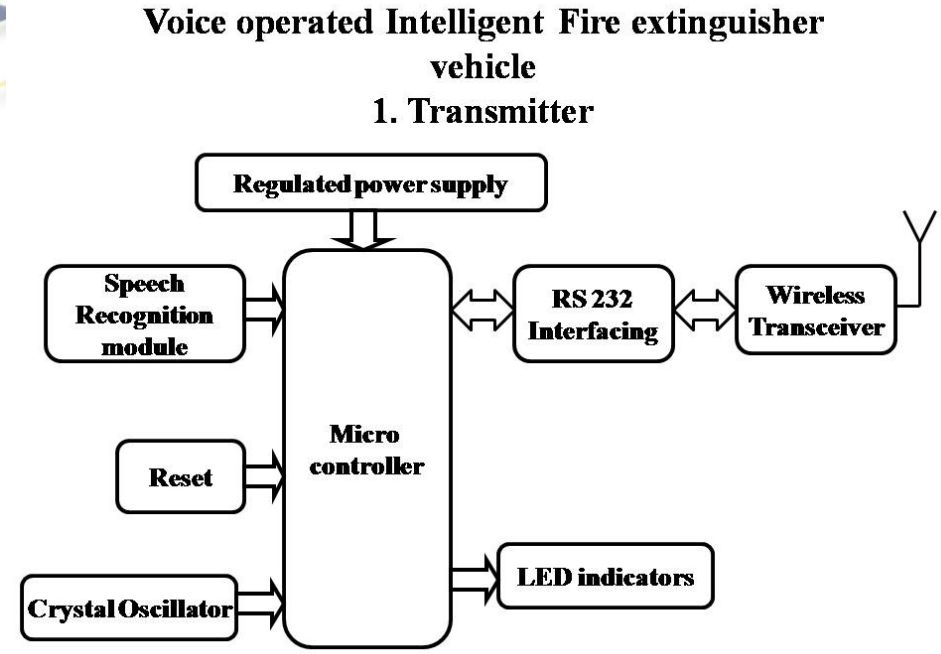
Software's used:

1. PIC-C compiler for Embedded C programming.
2. PIC kit 2 programmer for dumping code into Micro controller.
3. Express SCH for Circuit design.
4. Proteus for hardware simulation.

Regulated Power Supply:



Block diagram:



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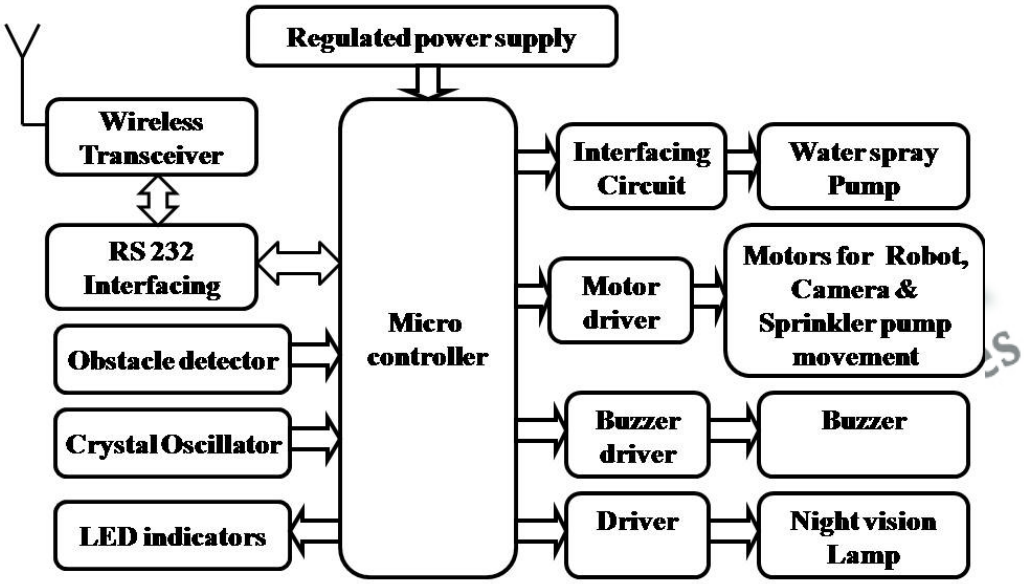
2. Receiver



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3. At TV