Voice Controlled Car Accessories

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Abstract:
This project caters to increasing the comfort level and also the safety features while using a car .This is done using an PIC18F4550 controlled system. The proposed work is done on a PIC18F based microcontroller and which is interfaced with EasyVR MODULE which enables the user to give voice commands to control the system and perform various operations. The proposed work can efficiently reduce accidents caused on roads by eliminating the factor of distraction during driving thus protecting life and property. Despite being voice controlled; this system ensures a greater safety to the public as a whole. This is because of the use of unique voice commands that prevents the unauthorized use and also better handling. This incorporates the seal break concept which will not activate the system unless a valid command is not recognized.

Keywords: Safety features, PIC 18F4550, Easy VR, Voice controlled

I. INTRODUCTION

There are many new technologies being designed for the automobile industry, some of these are:

- Assured Clear Distance Ahead
- Adaptive cruise control
- Advanced Automatic Collision Notification
- Intelligent Parking Assist System
- Automotive night vision with pedestrian detection
- Assured Clear Distance Ahead

Out of these new applications we have focused on voice control in our project. A **voice command device** (VCD) is a device controlled by means of the human voice. By removing the need to use buttons, dials and switches, consumers can easily operate appliances with their hands full or while doing other tasks. Some of the first examples of VCDs can be found in home appliances with washing machines that allow consumers to operate washing controls through vocal commands and mobile phones with voice-activated dialing. The possibility of adding (minimal) computing capabilities to everyday's objects will support the development of ubiquitous computing in the near future. As car technology improves, more features will be added to cars and these features will most likely give more control to a driver. Voice commands for cars, should allow a driver to issue commands and not be distracted. Voice command for cars is different from voice command for mobile phones and for computers because a driver may use the feature to look for nearby restaurants, look for gas, driving directions, road conditions, and the location of the nearest hotel. Currently, technology allows a driver to issue voice commands on both a portable GPS like a Garmin and a car manufacturer navigation system   This project uses Speech recognition which is the inter-disciplinary sub-field of computational linguistics   which incorporates knowledge and research in the linguistics, computer science, and electrical engineering fields to develop methodologies and technologies that enables the recognition and translation of spoken language into text by computers and computerized devices such as those categorized as smart technologies and robotics. It is also known as "automatic speech recognition" (ASR), "computer speech recognition", or just "speech to text" (STT). Some SR systems use "training" (also called "enrollment") where an individual speaker reads text or isolated vocabulary into the system. The system analyzes the person's specific voice and uses it to fine-tune the recognition of that person's speech, resulting in increased accuracy. Systems that do not use training are called "speaker independent "systems. Systems that use training are called "speaker dependent".

II. LITERATURE SURVEY

While driving the driver faces many distractions and discomforts. The distractions are in the form of the function like opening a window as he has to search for the switch. While using navigation, driver can feel discomfort as he has to type the address every time and other such discomforts can be overcome by voice controlled car accessory. Voice recognition also adds a security factor
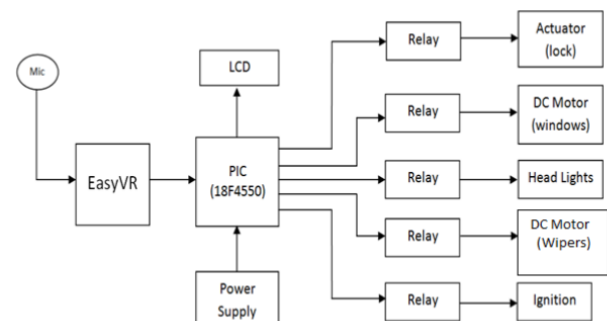
III. PROPOSED METHODOLOGY

Figure.1. Block diagram

3.1EasyVR:

This component is used in this project for the sole purpose of enabling voice controlled action to be performed. The command is initially feed by programmer which will later enable the user to perform certain operation. The user speaks into the mic specific commands to activate the operation .If incorrect command is give the operation will not be performed and a error will be displayed on the LCD. It is in general a multi-purpose speech recognition module designed to easily add versatile, robust and cost effective speech recognition capabilities to virtually any application. The EasyVR module can be used with any host with an UART interface powered at 3.3V – 5V, such as PIC and Arduino boards. Some application examples include home automation, such as voice controlled light switches, locks or beds, or adding "hearing" to the most popular robots on the market.

Figure.2. Easy VR Module

3.2 LCD:

Figure.3. 16x2 LCD

The LCD in our project is used to display various messages and also commands which are set by the user. It also indicates when the user can speak the command by displaying "speak now". LCD (Liquid Crystal Display) screen is an electronic display module and find a wide range of applications. A 16x2 LCD display is very basic module and is very commonly used in various devices and circuits. These modules are preferred over seven segments and other multi segment LEDs. The reasons being: LCDs are economical; easily programmable; have no limitation of displaying special & even custom characters. A **16x2 LCD** means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix. This LCD has two registers, namely, Command and Data

3.3RELAYS

Figure.4. Relay

The relay used in or project acts as a switch. Across the relay we have connected the device which is to be turned on /off based on the user commands. When the relay is turned on the operation is performed for that instant.RW Series Relay covers switching capacity by 10A is spite of miniature size to comply with user's wide selection. RWH is approved C-UL & TÜV safety standard. The employment of suitable plastic materials is applied under high temperature condition and various chemical solutions. Complete protective construction is designed form dust and soldering flux. If required, plastic sealed type is available for washing procedure.12A at 120VAC for RW & 12A at 240VAC for RWH are UL approved.

3.4 DC MOTOR:

Figure.5. DC Motor

The DC motor due to its rotator principle is used in our project to show the opening and closing of the car window. The clockwise and anti-clockwise motion of the motor enables us to use it as method to depict a car wiper . The**DC motor** in general is a class of electrical machines that converts direct current electrical power into mechanical power. The most common types rely on the forces produced by magnetic fields. Nearly all types of DC motors have some internal mechanism, either electromechanical or electronic, to periodically change the direction of current flow in part of the motor. Most types produce rotary motion; a linear motor directly produces force and motion in a straight line.

3.5 ACTUATORS:

The actuators is used in our project to covert the electrical signal send by the pic to mechanical operation of opening and closing of door in a car   The **actuator** is powered by a motor that converts electrical energy into mechanical torque. The electrical energy is **used** to actuate equipment such as multi-turn valves.

An **actuator** is a component of a machine that is responsible for moving or controlling a mechanism or system. An **actuator** requires a control signal and a source of energy. The control signal is relatively low energy and may be electric voltage or current, pneumatic or hydraulic pressure, or even human power.

Figure.6. Actuator

IV. IMPLEMENTATION

- Initially theEasyVR is stored with voice commands which will later be used to recognize the commands given by the user.
- The inputs are given to the EasyVR with the help of a mic, where the user speaks into it.
- The EasyVR then checks the received voice commands with its existing database.
- If the give command is present in its database then it moves it to the micro-controller.
- If the command is not present in the database then the action will not be taken by the system.
- The EasyVR is connected to a PIC micro-controller which is used to execute various operations specified by the user.
- The PIC is interfaced with a LCD to display the operation which is being executed. further the PIC is connected to many relays which act as driver to control various functions like turning on/off the head lights ,indicators and many other functions.
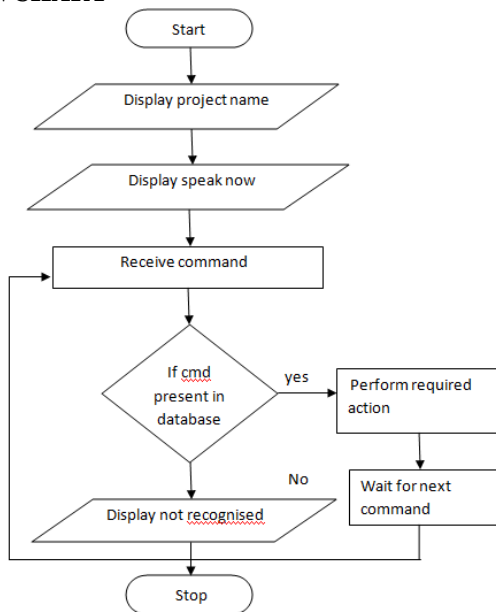
FLOWCHART

Figure.7. Flowchart

The system in our project is used to enable users to control their car accessories using simple voice commands. System initiates when the user enters into the car, on entering the system shows a welcome message (project name).This indicates that the system has started. It now displays a message to the user indicating them to speak a instruction in the form of a command. After the command is received system checks whether the command is present in the system. If the command is present then it performs the required action, in case the command is not present then it send a error message to the user indicating that command is incorrect. After the performing the required action it goes back into the start of the loop. This action is performed repeatedly till the system is switched off.

V. CONCLUSION

Efficient implementation of voice control is exhibited in this paper. High throughput is accomplished in this design. Results are compared with previous reported designs result to show efficiency. Simulation is done on proteus software . This system is being is being used by military ,vehicle industry, mobile phones over a last couple of years to increase the comfort level of the driver. Reduce distraction caused during driving thus preventing accidents. Vehicle security has also been improved.
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VI. REFERENCES

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