ABSTRACT

This thesis presents the project titled "Voice Controlled Robot Car". The voice controlled robot consists primarily of a scalable system of Voice Recognition (neural network), and many modular interfaces such as Radio Frequency transmission and reception, embedded systems, PIC microcontrollers, actuators such as DC, servomotors, and also moving vehicle parts. In this project, the goal of the design is to create a voice activated robot car, that is able to perform the regular movements that of a typical car, but it would be able to do so by interpretation of the speaker's speech command (primary) as well as the navigational option on the remote control (secondary). In this system, a 48 pin IC, HM2007 that is manufactured by Hualon Microelectronics Corporation is used.

The spoken word is uttered into a microphone headset that is connected into the circuit using a "4" TRS (tip, ring, sleeve) jack plug. The electrical signal is then sent to the speech recognition IC with an intermediary circuit that consists primarily of passive filter components. The IC was programmed to recognize sound bites such as "FRONT", "BACK","FRONTLEFT", "FRONTRIGHT", BACKLEFT, BACKRIGHT, AND STOP, that are spoken in an articulate and phonetically consistent manner into the microphone. The analogue speech signal is then digitized and sampled at a rate of 8000 samples per second in the IC.

The speech signal then goes through a series of real-time processing and neural network computation, which yields the correct target word and subsequently commanding the microcontroller on the transmitter circuit to communicate with the microcontroller on the receiver circuit, thusly actuating the desired movements on the car as per voice command.

Keywords: Voice Controlled Robot, Voice command, perform movement operation, move left, right, front, back