Graduation Project Documentation

Controlling Car using Hand Motion

Group: OCT-21

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Contents

Project Description

This project gave us the opportunity to apply the knowledge gained during the course of our Embedded Systems Diploma.

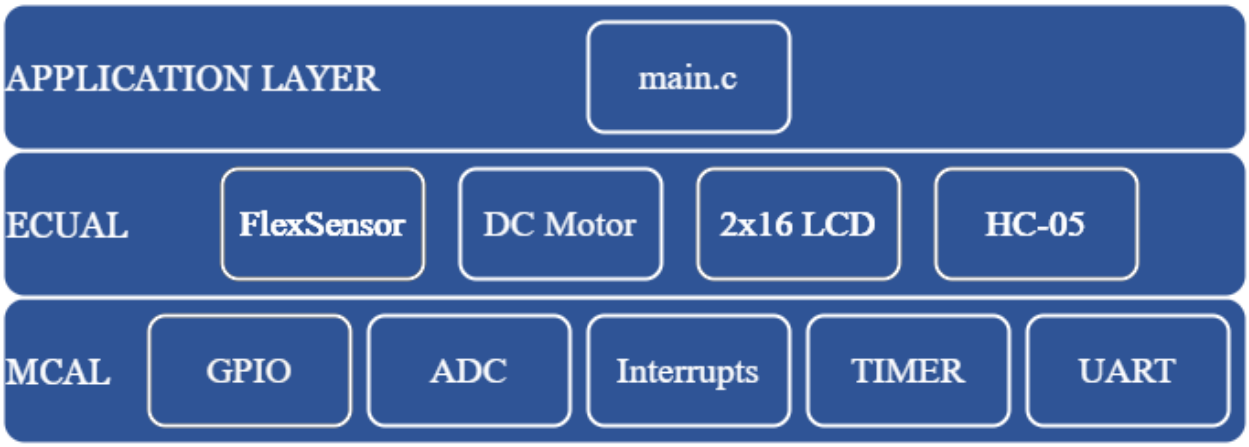
The project's main idea is to control a car wirelessly using hand gestures. We used two development kits for this project; A master kit and a slave kit.

The master kit is responsible for capturing the hand gestures using the Flex Sensors connected to it and then transmitting a command to the slave kit through the Bluetooth module HC-05.

The slave kit is continuously checking if any data has been received from the master kit and if so, it acts upon the transmitted command.

Project Design

The following figure illustrates the layered architecture in this project.



MCAL

GPIO

This module was used to write and read data from the pins.

ADC

This module was used to interface the flex sensors with the microcontroller.

Interrupts

This module was used to interrupt the slave kit with the sent data to immediately act upon it.

TIMER
This module was used to control the speed of the car's motors.

UART
This module was used to interface the Bluetooth module for data transmission.

ECUAL
FlexSensors
The Flex Sensors were used to capture our hand gestures.

DC Motors
The motors were used to drive the car's motion.

2x16 LCD
The LCD was used to display the data transmitted from the master kit to the slave kit.

HC-05
The Bluetooth module was used to transmit data wirelessly from the master kit to the slave kit.

Project Flowchart