**EL-203**

**Embedded Hardware Design**

**Voice Controlled Home Automation System**

**Team-21**

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**Overview**

With the advancement of technology, people prefer to live an easy life where many day-to-day tasks are completed or executed with a click of a button or a voice command or a gesture. Internet-of-Things has been a trending topic in recent times which has given rise to home automation systems. Many such systems can be designed with a little knowledge of computer science and electronics, which is comparatively cheap to implement and practical for day-to-day use.

**Target**

In this project we will simulate a system that would enable the control of electronic appliances in our home using voice commands over a smart phone. This includes appliances like lights, fans etc. and may be extended to other appliances. For our project, we will implement a system where different coloured LEDs (may represent lights in different rooms of the house) and small electric motor (acting like a fan) will be operated using simple voice components given to a smart phone. These commands will be transmitted through Bluetooth to the Arduino which will process them.

**Components**

* Arduino Uno
* Arduino Bluetooth Module (HC-05)
* Small Electric motor (replicating a fan)
* Breadboards
* LEDs
* An App to convert voice commands to strings
* Wires and resistors
* Battery (for power supply. Power can be used through a computer also)

**Working**

On the user’s side, the android app “AMR Voice” takes a voice command and converts it into a text command using Google’s speech-to-text engine. This text is then sent to the Arduino Bluetooth module (HC-05), which is connected to the Arduino, via the Bluetooth in the smart-phone. This text message is interpreted by the Arduino, which fires the given output pins that are connected to various appliances. The string commands are mapped to various pins, which determine which appliance to turn on. Multiple appliances can also be turned on simultaneously, given we code it in a certain way.

**Scope**

This system can be extended to include other appliances like refrigerators, microwaves, television, garages etc. This can also be integrated with other systems like Home surveillance systems to make the house completely automated. This can also be expanded to function within an organisation/ institution, where we need to turn on/off multiple appliances at once(for e.g. lights in all the rooms in CEP etc.)