

ANDROID SMART LIFE

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Abstract— Automation is a fast growing technology around the world. It not only focuses on improving industries performance but also daily lifestyle. Development of this project to design the model of the project and use of automation equipment will give large advantage in increasing comfort ability. Android Smart Life is a mobile application that focuses on two important features: automatic clothes drying rack and LPG sensor using Bluetooth technology. Microcontroller is used as a brain control for the movement of the clothes line. Movement of the clothes line in automatic and manual mode is tested. The clothes line will be moved following the switch pressed either to move inside or outside from the roofing area in an android mobile. For LPG leakage, message will be sent to the android phone.

Index terms- Android OS, Drying and smartphones, Microcontroller, Automatic Clothes drying rack, LPG sensor,

I. INTRODUCTION

A home automation system (HAS) integrates all the electrical and electronic devices in a house. The various techniques used in home automation systems include controlling of electrical and electronic devices, such as home security systems, entertainment systems, air conditioners, lawn watering systems, domestic robots, etc. People often forget to lift the suspension of clothing during the day rain. For people who work, they don't have to worry about their clothes that have been dried outside. Often people do not have time to manage their routine. This project develop a system where the clothes are dried. This project uses Microcontroller to install all programs that will give instructions to conduct this system properly and will automatically retrieve- out the clothes when they are dried and oppositely retrieve-in the clothes when they are wet. This part needs DC motor to convert electrical power into mechanical power for retrieve-out and retrieve-in all the clothes. The dry time of the clothes will be setup using android phone and it will automatically retrieve in the clothes using motor when the dried time is finished. For LPG leakage, message will be sent through the android phone.

II. SYSTEM OVERVIEW

Figure 1 shows the block diagram of the Android application based i.e., control function of the system. The system is connected to the Clothing Drying Rack and LPG Gas

Sensor. The Bluetooth connection is established between the system and the application which was designed and installed in the Android device.

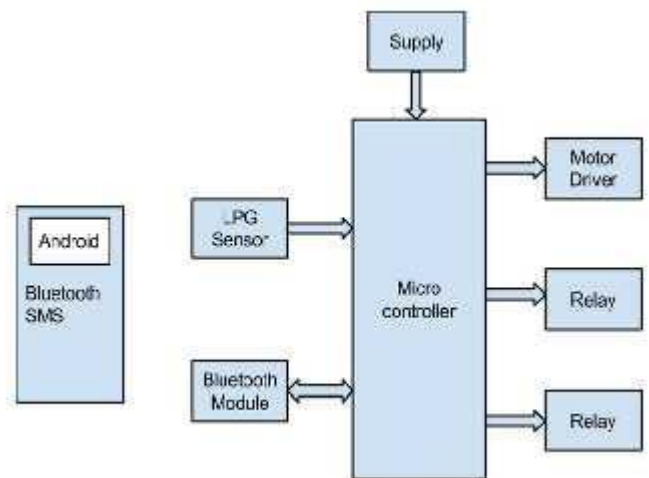


Figure 1: functional block of system

Flow of project is as follows:

1. User will send signal to the machine using android application.
2. Machine will turn ON/OFF depending on the signal sent by the user.
3. If the gas leakage is detected by the sensor then it will send notification to the user.

III. DESIGN COMPONENTS

The system contains both software and hardware components which are classified as follows:

A. SOFTWARE COMPONENTS:

- i. **B4A:** This software is used to develop real world, native android applications.
- ii. **Keil:** This software is used for microcontroller programming. Assembly language and C language can be used.

- iii. **Flash Magic:** It is a software which is used to program hex code in EEPROM of microcontroller.
- iv. **Dip Trace:** It is a software used for creating printed circuit boards and schematic diagrams
- v. **Java JDK and Android SDK:** Java language is used to write Android applications. The Android Software Development Kit (SDK) provides all the tools that are necessary to develop Android applications (API). This includes a compiler, debugger, device emulator, as well as its own virtual machine i.e. an emulator to run Android programs.

B. HARDWARE COMPONENTS:

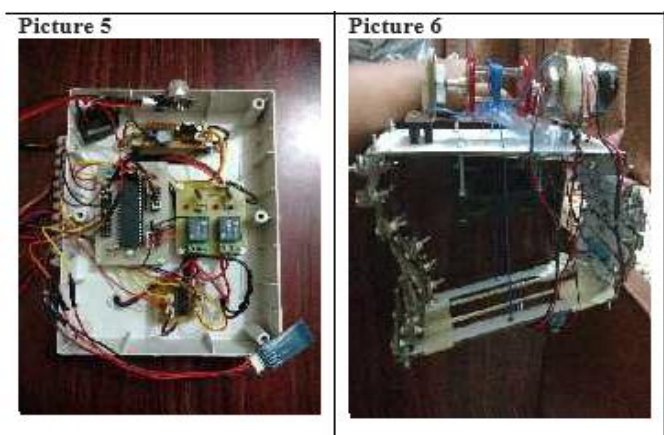
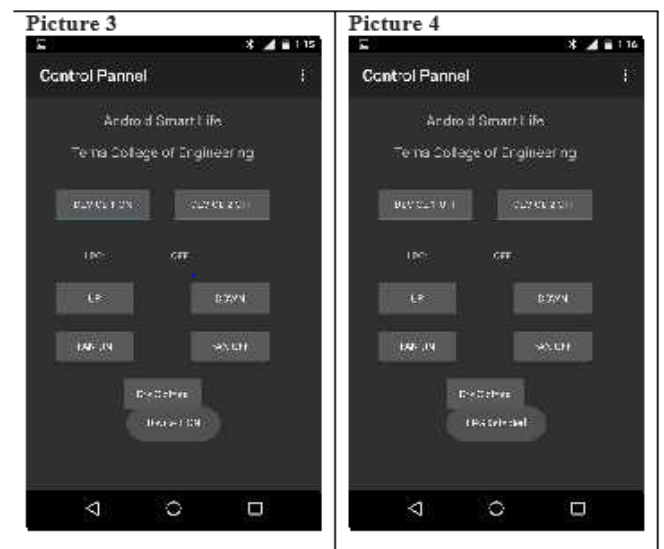
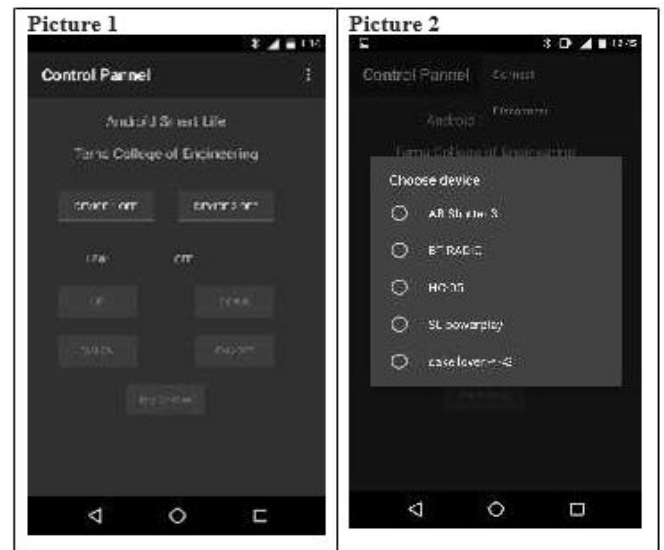
- i. **Microcontroller:** The Atmel's AT89S52 microcontroller used is the brain of the entire system. It will receive the commands from android phone and compute the appropriate instructions to control the machine.
- ii. **Bluetooth:** A HC-05 Bluetooth module is widely used with Microcontroller to enable Bluetooth communication. The key pin of the module is used to set the password for pairing the module with our devices.
- iii. **Motor Driver:** Motors require more current than the microcontroller pin can typically generate, therefore some type of a switch is needed, which can accept a small current, amplify it and generate a larger current, which further drives a motor. This entire process is done by a motor driver. L293D is a typical Motor driver or Motor Driver IC.
- iv. **Relay:** It is an electrical switch that uses an electromagnet to turn the switch from off to on position instead of a person moving the switch. It takes small amount of power to turn on a relay.
- v. **LPG Sensor:** MQ-6 sensor is an easy to use liquefied petroleum gas (LPG) sensor, suitable for sensing LPG (mostly made up of propane and butane) concentrations in the air. It can detect gas concentrations in the range of 200 to 10000ppm.

- 4. **Picture 4** notifies the user that LPG leakage is detected.
- 5. **Picture 5** is the hardware kit of the system.
- 6. **Picture 6** is the model of Cloth drying rack.

IV. RESULTS

The system is tested and verified in real time environment. The working of the system is shown in the pictures below.

- 1. **Picture 1** is the home page of Android Smart Life application.
- 2. **Picture 2** tells the user to connect to the Bluetooth device. Once the Bluetooth connection is established, the application is ready to use and control the machine.
- 3. **Picture 3** shows that Device 1 is on. The up and down buttons can be used for movement of cloth drying rack. There is a fan used in the system for quick drying. The fan can be turned on/off by the user. The application contains a button called 'Dry Clothes' in which a timer is set for the cloth dryer. In this mode, the rack will automatically move up and down, fan and lights will be turned on/off for a specified period of time without human intervention.



V. FUTURE SCOPE

This project can be further developed by integrating it with the internet to track your home while sitting in a remote area. By doing this, one can keep an eye on his or her home through an internet connected to the user's mobile phone or PC or laptop. This will not only improve the security of your home in this modern day world but will also assist in conservation of energy like if, by mistake, you left any home appliance switched on, you can check the status of the appliance on the graphical interface made on your mobile and can switch it off using the internet connectivity.

VI. CONCLUSIONS

The objective of the project is to realize the Smart Living, more specifically the Automatic clothes drying rack and LPG leakage control system using Bluetooth technology.

Android Smartphone is a convenient and suitable device to provide mobility for tracking the daily life activities due to its rich functionalities. Android phone have advantages such as humane interface, customizable applications and android phone is easy to carry. By constant improvement in the control function, android phone allows us anytime, anywhere to control any device, and realizes the highly intelligent home.

It is concluded that Smart Living will slowly turn into a reality and consumers will control their home wirelessly while being in a remote area.

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