Connected Living Spaces

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*Abstract*—*Home automation systems are one of the most happening vibrant technologies that are being developed in this decade, with the automation and the digital revolution it was the time that our homes and industries become digital also, there have been vast significant achievements in industrial automation in the past 6-7 years. We are going to discuss about a new self-developed industrial automation system .It consists of important modules like automatic door locks, facial recognition ,mood-detection and rejuvenation,leakage-detection,,remote-appliance-control,surveillance and enhanced security measures.*

***Keywords***— ***Home automation, Home Security, Internet Of Things, MQTT, Smart Home, ESP, Node-Red ,Industrial IOT***

# Introduction

With the advent of internet everything has migrated to the internet and with it arose the need to manage and run our houses digitally .Home automation and home security has been an important focus in this decade.It allows us to monitor our houses/working spaces and control it even when we are away with the use of computers,smartphones and tablets.Automation systems consists of a single controller through which we can communicate and control the devices such aslights,fans,airconditioners,heaters,boilers etc.

First we make all the devices in the house communicate with each other and the main controller through the MQTT protocol ,then we isolate the devices in a local network for enhanced security.The users are provided with a website and login credentials through which they can login and monitor and control the devices and the house as a whole.The users can switch on/off the lights,fan,heaters,they can set the room temperatures,automatically lock and unlock doors all with a click of a button.Our automation system also provides unique features such as automatic access control with facial recognition ,mood detection and rejuvenation ,surveillance and leakage detection.It aims at giving the users a user friendly effective seamless home automation solution.It is not only designed for homes,it can be used by educational institutions and corporate offices also..

# MODULES

## ACCESS CONTROL

This modules deals with the automatic access control imparted to the doors/entrances/exits of the user’s respective living spaces.

The users are provided with a Web User Interface (compatible with both PC and mobiles) to control their locks . The User interface provides a GUI of all the locks pertaining to their living spaces in the form of switches. Users can also monitor and view the number of locks and unlocks of a particurlar lock and can also monitor and view the times it was last locked/unlocked.The counters and time are reset every week.

The Web GUI was built using node-red - a javascript compatible flow based software for creating web flows and processes.

In this the ESP32 board communicates with the locks and controls the various locks,it communicates with the Nodered server running on the raspberry pi via an mqtt connection running on the raspberry pi. It then stores important data like the number of locks ,unlocks,time the particular lock was locked or unlocked on a local ubuntu server and is sent as a response back to the First, confirm that you have the correct template for your paper size. This template has been tailored for output on the A4 paper size. If you are using US letter-sized paper, please close this file and download the Microsoft Word, Letter file.

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*a**b* 

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