**An Industrial Oriented Mini Project / Summer Internship Report on**

### HOME APPLIANCES CONTROL USING RASPBERRY PI

**Submitted in Partial fulfillment of requirements for the award of the degree of**

**BACHELOR OF TECHNOLOGY**

**In**

## COMPUTER SCIENCE AND ENGINEERING (AI & ML)

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**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (AI & ML)**

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### Narayanaguda, Hyderabad, Telangana-29

# DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (AI & ML)

**CERTIFICATE**

This is to certify that this is a bonafide record of the project report titled **“Home Appliances Control Using Raspberry Pi”** which is being presented as the Industrial Oriented Mini Project / Summer Internship report by

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**PEO2:** Graduates will try and provide solutions to challenging problems in their profession by

applying computer engineering principles.

**PEO3:** Graduates will engage in life-long learning and professional development by rapidly

adapting changing work environment.

**PEO4:** Graduates will communicate effectively, work collaboratively and exhibit high levels

of professionalism and ethical responsibility.

# PROJECT OUTCOMES

**O1:** Accurately detect motion and control the appliances accordingly.

**O2:** Allow control of appliances remotely.

**O3:** Change the state of appliances instantly.

**O4:** Work seamlessly over the internet.

**MAPPING PROJECT OUTCOMES WITH PROGRAM OUTCOMES**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **PO** | **PO**  **1** | **PO**  **2** | **PO**  **3** | **PO**  **4** | **PO**  **5** | **PO**  **6** | **PO**  **7** | **PO**  **8** | **PO**  **9** | **PO10** | **PO**  **11** | **PO**  **12** |
| **O1** | H | H | M | H | M | L | M | L | H | M | M | M |
| **O2** | H | H | M | M | M | L | M | L | H | M | M | M |
| **O3** | H | H | M | M | M | L | M | L | H | M | M | M |
| **O4** | H | H | M | M | M | L | M | L | H | M | M | M |

**L – Low M –Medium H– High**

**PROJECT OUTCOMES MAPPING**

**PROGRAM SPECIFIC OUTCOMES**

|  |  |  |
| --- | --- | --- |
| **PSO** | **PSO 1** | **PSO2** |
| **P1** | H | H |
| **P2** | H | M |
| **P3** | M | M |
| **P4** | M | M |

**PROJECT OUTCOMES MAPPING**

**PROGRAM EDUCATIONAL OBJECTIVES**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **PEO** | **PEO1** | **PEO2** | **PEO3** | **PEO4** |
| **P1** | H | H | M | H |
| **P2** | M | H | M | H |
| **P3** | M | H | M | H |
| **P4** | M | H | M | H |

# DECLARATION

We hereby declare that the results embodied in the dissertation entitled **“**Home appliances control using Raspberry Pi'' has been carried out by us together during the academic year 2023-24 as a partial fulfillment of the award of the B.Tech degree in Information Technology from JNTUH. We have not submitted this report to any other university or organization for the award of any other degree.



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# ABSTRACT

In this project, a prototype and implementation of Home Appliances is demonstrated. The proposed system consists of a Hardware interface and Software interface. Hardware interface includes Raspberry Pi, lights, fans, DC motor and software interface includes IOT supported dashboard platform. We automate lights and fans using motion sensors like IR sensors or we can use an IOT based dashboard for operating fans and lights. A Raspberry Pi is used for controlling home appliances and sensors. An application is provided for controlling multiple home appliances. This system is one of the best methods for controlling home devices with ease with multiple users and one of the best methods for an energy management system. This system is also expandable for controlling various appliances used at home and for security and safety.

# LIST OF ABBREVIATIONS

|  |  |
| --- | --- |
| RPi | Raspberry Pi |
| IOT | Internet of Things |
| UI | User Interface |
| SVM | Support Vector Machine |
| GUI | Graphical User Interface |

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# CHAPTER-1

# INTRODUCTION

### Purpose of Project

Automation (such as home automation and industrial automation etc) has become important in today’s world as it helps to complete a task with lesser human assistance and in a smarter way. Houses are becoming smarter and developed these days with the help of automation devices. Home electrical appliances are using remote-controlled switches rather than conventional switches. In this project Raspberry Pi is used for controlling home appliances and sensors. An application is provided for controlling multiple home appliances.

### Problems with Existing Systems

* + 1. In many of the existing systems, for appliance control, the controlling device and the appliance need to be connected to the same network. Whereas in this project, control of appliances is possible from anywhere in the world over the internet.
    2. In many of the existing systems, the PIR sensor is used for motion detection.

Whereas in our project, we use an IR sensor which is better than PIR because the PIR motion detector is sensitive to the temperature changes in the environment. Environment changes quickly will cause false alarm. PIR should not be installed facing the moving objects or background changing objects, moving objects will cause airflow change, it may cause false alarm.

* + 1. In many of the existing systems, Arduino boards are used. Whereas in our project, we use Raspberry Pi which is better than Ardu