**Group Project**on

**SMART DOOR using Facial Recognition**

*Submitted in the partial fulfilment of the requirements for  
the award of the degree of*

**BACHELOR OF TECHNOLOGY**

In

**ELECTRONICS AND COMMUNICATION ENGINEERING**

By

**P Sanjeev ROLLNO. 17311A0437**

**M M Sai Prakash ROLL NO. 17311A0438**

**Venakt Rayapudi ROLL NO. 17311A0445**

**UNDER THE GUIDANCE OF**

**Mr. B Krishna Bharath**

**Assistant Professor**



**DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY**

**Yamnampet (V), Ghatkesar (M), Hyderabad – 501 301.**

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**SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY   
(Affiliated to Jawaharlal Nehru Technological University, Hyderabad)  
Yamnampet (V), Ghatkesar (M), Hyderabad – 501 301**



**CERTIFICATE**

This is to certify that the project report entitled **“SMART DOOR using Facial Recognition”** is being submitted by

**P Sanjeev ROLLNO. 17311A0437**

**M M Sai Prakash ROLL NO. 17311A0438**

**Ventakt Rayapudi ROLL NO. 17311A0445**

in partial fulfilment of the requirements for the award of **Bachelor of Technology** degree in **Electronics and Communication Engineering** to **Sreenidhi Institute of Science & Technology** affiliated to **Jawaharlal Nehru Technological University, Hyderabad** (Telangana)**.** This record is a bona fide work carried out by them under our guidance and supervision. The results embodied in the report have not been submitted to any other University or Institution for the award of any degree or diploma.

**Internal Guide Project Coordinator**

**Mr. B Krishna Bharath Mr. R Madhusudhan  
Assistant Professor Assistant Professor**

**Head of the Department** Dr. S.P.V. SUBBA RAO  
Professor, Department of ECE

**DECLARATION**

We hereby declare that the work described in this thesis titled **“SMART DOOR using Facial Recognition”** which is being submitted by us in partial fulfilment for the award of Bachelor of Technology in the Department of **Electronics and Communication Engineering,** Sreenidhi Institute Of Science & Technology is the result of investigations carried out by us under the guidance of **Mr. B Krishna Bharath, Assistant Professor, Department of ECE, Sreenidhi Institute of Science & Technology, Hyderabad.**

No part of the thesis is copied from books/ journals/ internet and whenever the portion is taken, the same has been duly referred. The report is based on the project work done entirely by us and not copied from any other source. The work is original and has not been submitted for any Degree/Diploma of this or any other university.

Place: Hyderabad

Date:

**P Sanjeev ROLLNO. 17311A0437**

**M M Sai Prakash ROLL NO. 17311A0438**

**Venakt Rayapudi ROLL NO. 17311A0445**

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**Abstract**

Smart door is a concept of digitizing and automating of a traditional door of our home. This system includes a smart lock for better security and convenience, voice feedback is inculcated into the system for better experience, Internet of Things is used for internal communication and allows us to extend the applications and features.

Facial recognition is the trigger for this system, haar cascade is the classifier used for the module. A smart lock is an electronic and mechanical locking device that opens wirelessly with an authorized users’ authentication. In a smart home, smart locks allow a homeowner to enter their home or provide others access without requiring a traditional key. The Internet of Things (IoT) is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. A Haar Cascade is basically a classifier which is used to detect the object for which it has been trained for, from the source. The Haar Cascade is trained by superimposing the positive image over a set of negative images. The training is generally done on a server and on various stages. Hardware interface is done using an Arduino powered WiFi enabled (ESP8266) development board "Wemos". This acts as a gateway for IoT. The processing is done in a laptop and the end result is sent to the hardware. Firebase by Google is used as the cloud because of the convenient MQTT interfacing. MQTT is an ISO standard lightweight, publish-subscribe network protocol that transports messages between devices. It works on top of the TCP/IP protocol suite. It is designed for connections with remote locations where a "small code footprint" is required or the network bandwidth is limited.

Keywords :  
Haar Cascade, MQTT, IoT, WeMos, ESP8266, Firebase.

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