Group Project

on

SMART DOOR using Facial Recognition

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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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