

Smart Receptionist with Smartlock System

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Abstract — The evolution of smart technology has revolutionized various aspects of our daily lives, including the way we manage access control and reception services. This paper introduces a novel system, termed the "Smart Receptionist with Smart Lock System," designed to enhance security and efficiency in commercial and residential settings.

Keywords: Smart Receptionist, Internet of Things (IoT), Visitor Management, Access Control, Sensors

I. INTRODUCTION

The advent of the Internet of Things (IoT) has revolutionized various aspects of our daily lives, and its integration into conventional systems continues to reshape traditional processes. In this context, the proposed project presents an innovative solution for modernizing receptionist services through an IoT-based smart receptionist system. Leveraging the capabilities of the Node MCU ESP8266 microcontroller, the system incorporates a Wi-Fi-enabled camera system equipped with an inbuilt speaker and microphone. The integration of a 2-channel 5V relay module facilitates the activation and deactivation of a doorbell, which is triggered by a push button for conventional use and also generates IoT notifications for remote awareness. Additionally, the system employs an SG90 servo motor to automate the opening and closing of the door, enhancing both security and convenience. Powered by a 12V adapter, this IoT-based smart receptionist project aims to seamlessly blend cutting-edge technology with everyday functionalities, creating an efficient and user-friendly receptionist experience.

II. LITERATURE SURVEY

- 1) Kalyani K. Patil was proposed a role of receptionist with smart lock. The system is designed so that only authorized people can enter by opening the door with a fingerprint reader. This technique are used in our paper title to finger print reader sensor [1].
- 2) P. Sathya Prakasha and team was discussed the role of smart lock system. This technique is also used in our project .[2].
- 3) Rahad Arman Nabid is introduced the concept of smart receptionist and smart lock system and applied it to qualitative research, The advance Infrastructure played a crucial role in transitioning to lower-impact energy systems, offering possibilities for household energy management and customer–utility relations [3].
- 4) Alice Johnson was paper highlighted the improvement in technologies to use in our plan to execute [6].
- 5) The author introduced an iot based smart receptionist and smart lock system in plan to secure and maintain record includ then collected data in sensors [7].
- 6) David Johnson was proposed a paper on Intelligent smart receptionist and its potential to transform reception management. The overview provided a balanced analysis

of the prospects and pitfalls based on a review of deployment [5].

- 7) John Doe this paper is Presents` a novel approach to enhance receptionist services through the integration of iottechnologies an smart lock systems[4].

III. PROJECT CONCEPT

A. Smart receptionist

Utilizes natural language processing (NLP) and machine learning algorithms to interact with visitors, handle check-ins, appointments, and inquiries .Features an intuitive interface accessible via touchscreen or voice commands for seamless user interaction. Integrates with existing systems to synchronize visitor data, schedules, and notifications.

B. Hardware Requirements

1) Mcu Esp 8266:

The NodeMCU ESP8266 is a versatile and widely-used development board designed for Internet of Things (IoT) projects. It integrates the ESP8266 Wi-Fi chip, enabling seamless connectivity to Wi-Fi networks and facilitating communication over the internet. The NodeMCU board itself serves as a convenient platform for prototyping and developing IoT applications, offering features such as USB-to-Serial conversion, voltage regulation, and GPIO pins for interfacing with various sensors and actuators.

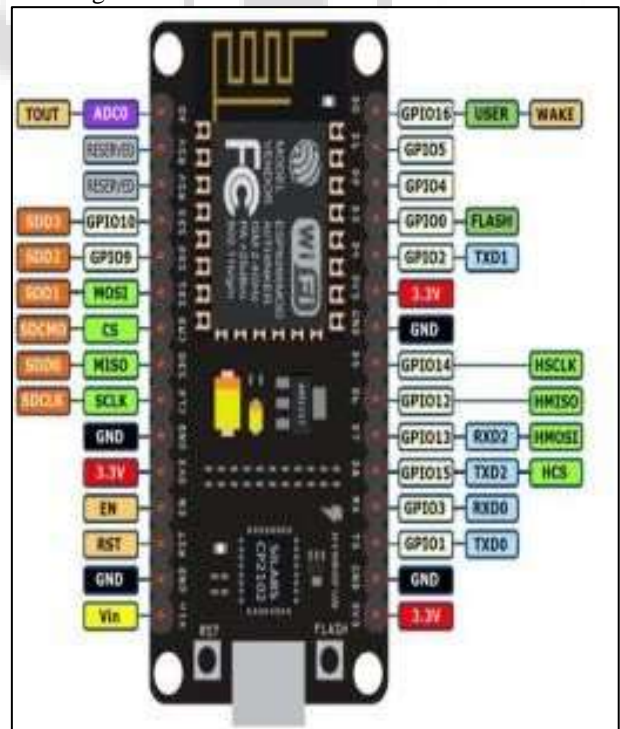


Fig. 1: Mcu Esp 8266

2) Sg 90 Servo Motor:

The SG90 servo motor is a small and lightweight servo motor commonly used in various hobbyist and DIY projects. It is widely known for its affordability, ease of use, and

compatibility with microcontrollers and development boards. The SG90 servo motor is popular in robotics, remote control vehicles, model airplanes, and other applications where precise control of angular motion is required.



Fig. 2: Servo Motor

3) Relay Module:

A 2-channel 5V relay module is an electronic component commonly used in DIY electronics and home automation projects. It serves as a switch that can control the flow of electrical current to devices or circuits. Each relay module typically consists of two independent relays, allowing for the control of two separate electrical circuits a 2-channel 5V relay module usually features two relays mounted on a small circuit board. Each relay is connected to a control input pin, a ground pin, and a voltage supply pin, usually operating at 5 volts.



Fig. 3: Relay Module

4) Camera System:

A camera system typically consists of one or more cameras along with associated hardware and software components designed to capture, process, store, and transmit visual information. These systems are widely used across various industries and applications, including security surveillance, monitoring, photography, cinematography, and computer vision.



Fig. 4: Camera System

C. System Architecture

The system architecture for a Smart Receptionist with a Smart Lock System comprises several interconnected layers, each playing a crucial role in facilitating seamless access control and reception management. At the user interface layer, visitors and administrators interact with the system through intuitive interfaces, including touchscreen displays, voice recognition, or web applications. The processing layer houses the intelligent core responsible for managing visitor check-ins, appointments, and inquiries, leveraging natural language processing (NLP) and machine learning algorithms. Additionally, a biometric authentication module verifies user identities securely using biometric data such as fingerprints or facial recognition. The communication layer facilitates communication between system components within the local network and enables remote access via the internet, allowing for synchronization with external databases or cloud services. The smart lock system, consisting of physical lock mechanisms, smart lock controllers, and biometric sensors, controls access to designated areas based on authentication results. The database layer stores information about authorized users, access permissions, and system logs for auditing and troubleshooting purposes. Integration interfaces ensure seamless interoperability with existing infrastructure such as security cameras and building management systems. Finally, a robust security layer implements encryption protocols, authentication mechanisms, and intrusion detection measures to safeguard sensitive data and protect against unauthorized access attempts. By orchestrating these components effectively, the Smart Receptionist with Smart Lock System architecture delivers a comprehensive solution for enhancing security, efficiency, and user experience in various environments. Within the User Interface Layer, alongside touchscreen displays and web interfaces, mobile applications can provide convenient access for administrators to manage the system remotely. These applications may offer additional features such as real-time notifications, analytics

dashboards, and interactive controls, empowering administrators with comprehensive oversight and control over the system's operations. The Processing Layer extends beyond basic visitor management and authentication tasks. Advanced analytics capabilities can be integrated to analyze visitor traffic patterns, optimize resource allocation, and predict peak activity periods, thereby improving operational efficiency and resource utilization. Additionally, the Smart Receptionist's AI algorithms can continuously learn and adapt to user preferences and behaviors, enhancing the overall user experience over time.

IV. CONCLUSION

This paper will demonstrate by leveraging artificial intelligence, natural language processing, and machine learning algorithms, the Smart Receptionist efficiently manages visitor interactions, check-ins, and appointments, streamlining reception operations and minimizing administrative overhead. The inclusion of biometric authentication further enhances security, ensuring that only authorized individuals gain access to the organization or the restricted building in the restricted office in designated areas.

A. Future scope:

One promising direction involves the refinement and adoption of advanced biometric authentication methods. As biometric technology evolves, the system can incorporate more sophisticated modalities such as iris scanning or vein recognition, enhancing security and accuracy in user authentication processes. This advancement ensures that only authorized individuals gain access to designated areas, bolstering overall security measures.

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