

AMS

“Automated Management Systems”

| DOCUMENT INFORMATION | |
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1 Project Description/Proposal

The Automated Management Systems (AMS) is an innovative IoT project focused on enhancing security and privacy in a controlled company environment. Addressing the challenge of granting controlled access without compromising sensitive information, AMS introduces a comprehensive solution.

AMS integrates facial recognition and remote access technologies to regulate entry, ensuring only authorized personnel enter the controlled environment. It employs sophisticated security monitoring to restrict access to specific devices, preventing unauthorized usage within the environment.

This system optimizes energy consumption by selectively powering on devices based on user permissions. When multiple individuals are present, AMS requires facial recognition or QR code authentication for device activation, ensuring access control.

Additionally, AMS implements secure login protocols for devices, requiring facial recognition and/or QR code authentication, thereby enhancing security measures within the controlled environment. By providing detailed access control and authentication mechanisms, AMS ensures heightened security and restricted access while optimizing resource utilization.

2 Project Repositories/Links

2.1 *GitHUB*

URL: <https://github.com/ki321g/AMS>

2.2 *Glitch*

URL: TBD

3 Tools, Technologies and Equipment

3.1 Tools

I am planning on using the following tools this may change as I research the project a bit more.

3.1.1 *Glitch*

Glitch is a collaborative platform enabling users to build, code, and deploy web applications in a seamless and social environment. It offers a creative space with real-time editing, making coding accessible and enjoyable for teams and individuals alike.

3.1.2 *Firebase*

Firebase is a comprehensive platform by Google that provides various tools and services for building web and mobile applications. It offers features like real-time database, authentication, hosting, cloud functions, and more, enabling developers to create powerful, scalable apps with ease while handling backend complexities efficiently.

3.1.3 *MQTT (Message Queuing Telemetry Transport)*

MQTT (Message Queuing Telemetry Transport) is a lightweight messaging protocol designed for efficient communication between devices in IoT and other applications. It enables secure, reliable data transfer with minimal bandwidth usage, ideal for interconnected systems and remote device management.

3.1.4 *ThingSpeak*

ThingSpeak is an IoT platform that allows users to collect, analyze, and visualize data from connected devices. It offers tools for real-time data handling, enabling users to create applications and dashboards to monitor and react to information generated by IoT sensors or devices

3.1.5 *Bynk*

Blynk.io is a versatile IoT platform empowering developers to create connected applications effortlessly, streamlining device communication and control. It offers a user-friendly interface and robust tools for building custom IoT solutions seamlessly.

3.2 *Technologies*

Again, I am planning on using the following technologies, but this may change as I research the project a bit more.

3.2.1 *Python*

Python is a high-level, versatile programming language known for its simplicity and readability. It's used across various domains such as web development, data analysis, artificial intelligence, scientific computing, and more. Python's clean syntax and extensive libraries make it beginner-friendly while offering powerful capabilities for building applications, automating tasks, handling data, and implementing algorithms efficiently.

3.2.2 *Javascript*

JavaScript is a versatile programming language primarily used for web development. It allows developers to create interactive and dynamic content within web pages. JavaScript is capable of manipulating webpage elements, handling user interactions, performing asynchronous tasks, and much more. It's widely supported by browsers and has become a fundamental technology for front-end web development, enabling the creation of rich, engaging user experiences on the internet.

3.2.3 *Shell Scripting*

Shell scripting involves writing scripts or programs using a shell (command-line interface) to automate tasks or execute sequences of commands in a Unix or Linux environment. It utilizes scripting languages (like Bash, sh, or others) to combine and execute commands, perform file operations, manage processes, and automate routine tasks, enhancing efficiency and simplifying complex operations in a system.

3.2.4 *HTML*

HTML (Hypertext Markup Language) is the standard language used to create web pages. It provides the structure and content of a webpage by using a set of markup tags that define different elements such as headings, paragraphs, images, links, and more. HTML forms the backbone of a webpage, organizing and presenting information for browsers to display.





3.2.5 *CSS*



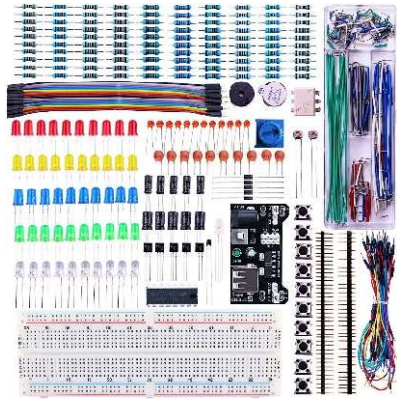

Cascading Style Sheets (CSS) is a programming language used in web development to control the visual presentation of a website or HTML

document. It defines the layout, colors, fonts, and other stylistic elements, allowing developers to customize the appearance and design of web pages to create engaging user experiences.

3.3 *Equipment*

The system will incorporate the following devices

| Name | Image |
|--|--|
| Raspberry Pi 4 B |  |
| pHAT Stack Kit for Raspberry Pi |  |
| Raspberry Pi Camera Module 3 Wide NOIR |  |
| USB Accelerator Edge TPU Coprocessor |  |

| | |
|--|--|
| Raspberry Pi Sense HAT |  A green printed circuit board (PCB) with a white 8x8 LED matrix in the center. It features various electronic components, including a microcontroller, capacitors, and a USB Type-C port. The board is designed to be plugged into the GPIO pins of a Raspberry Pi. |
| Jopto 5PCS HC-SR501 Human Body Pyroelectric Infrared PIR Motion Detection Sensor |  A small electronic module with a white, hemispherical lens on top. It has three pins (VCC, GND, and OUT) and a blue potentiometer on the side. The sensor is used for detecting motion and is commonly used in security systems. |
| ELEGOO Upgraded Electronics Fun Kit |  A collection of electronic components and tools. It includes a breadboard, various resistors, capacitors, integrated circuits, jumper wires, and a small PCB. The kit is designed for learning electronics and prototyping projects. |
| Woox R4785 smart plug |  A white, rectangular smart plug with a green label. It has a standard two-prong electrical plug on one side and a USB Type-C port on the other. The plug is designed to be used with smart home systems for controlling power to various devices. |

| | |
|--|--|
| <p>Energenie ENER010 4 Way Remote Control Extension Lead</p> |  A white, rectangular extension lead with four three-pin UK sockets. A small, silver remote control is shown floating above the lead. The Energenie logo is visible on the side of the lead. |
| <p>Energenie ENER314-RT Two-Way Pi-Mote</p> |  A green printed circuit board (PCB) with a gold-colored ribbon cable attached to the bottom. The board features the Energenie logo and various technical specifications including "ENER314-RT", "VER02", "94V0", and "48 14". |

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