



443805057 حصه عبداللطيف مدخلي

443804612 إلهام سعيد الاسمري

443807086 اسيل احمد اليزيدي

443805638 ميسون عبدالله الشهري

443805541 ليلى احمد سعيد

443805488 روان علي الاحمري

د/ مشاعل محمد محمد عسيري

Smart locker

the problem :

University students need a place to keep their belongings and bags so that they do not have to carry them with them at all times or leave them in a place vulnerable to theft and loss.

the solution :

A smart locker with a decent number of drawers. It locks and unlocks with a fingerprint and has an internal light-sensing light. It operates on battery and charging and is linked to its own application called (kku lockers). Through it, the student can log in to her academic account, see the available drawers, add a fingerprint, and schedule use. This service can be used by adding a calculator that calculates the number of times of use based on the student's schedule, for example: one day's use is two riyals, or one month's use is fifty riyals, and so on..

To provide a service benefit to the student and a profitable benefit to the investor.

The environment :

We will use this smart locker in
University for students or University employees like
Doctors , Security staff

The actuator :

It's smart locker , its security will be very high. There will be a screen that contains a fingerprint lock, and it shows whether the safe is available for use or not, and also a payment device is attached to the program for ease of use.



Sensors :

Sensory sensors are types of sensors designed to sense the surrounding environment and convert sensory information into signals that can be understood. These include sensors such as optical sensors that respond to light and colours, acoustic sensors that enable the detection of sound waves, and touch sensors that respond to texture and pressure. These sensors are used in a wide range of applications such as smartphones, tablets and virtual reality devices

There are many types of sensory sensors, including:

1-Capacitive touch sensors

It responds to mechanical pressure, allowing interaction by simply touching a surface, such as touch screens in phones and tablets.

2- Infrared touch sensors

An infrared beam is used to detect touches of fingers or other objects on a surface.

2- Light sensors

A detector sensitive to light or electromagnetic radiation. Optical sensors are used to make various visual measurements or to operate certain devices or tools, such as opening and locking a door.

A light sensor is used in smart lighting systems where it can react to lighting changes and adjust the lighting according to the needs of the environment.

3- Fingerprint recognition sensor

It is a type of sensor used to record and analyze a fingerprint for individual identification. It records the unique features of a human fingerprint, such as details of lines and grooves, and converts them into digital data.

This technique is commonly used in:

1 Security and access systems

- Opening doors or devices when verifying an individual's identity.

2 Smartphones and tablets

- To unlock the device or confirm transactions via fingerprint recognition.

The fingerprint recognition sensor provides an efficient and secure way to verify personal identity and ensure protection in a variety of applications.

Performance measure :

Smart lockers offer several advanced features and performance enhancements compared to regular lockers, making them more versatile, secure, and convenient for users and operators. Key distinctions include:

1. Access Control: Smart lockers typically use digital keys or access codes, RFID, biometrics, or smartphone apps for unlocking, which can be more secure and customizable compared to physical locks and keys used in regular lockers.
2. Remote Management: Administrators can manage smart lockers remotely, including assigning lockers, changing access codes, and monitoring usage, without needing to be physically present.
3. Usage Tracking and Analytics: Smart lockers can track usage patterns, access times, and occupancy rates, providing valuable data for optimizing their operation and understanding user behavior.
4. Customizable Access: Access to smart lockers can be easily customized for different users, time-limited, or set for single or multiple uses, offering flexibility for various applications.
5. Notifications and Alerts: Users and administrators can receive notifications for events like locker assignment, unauthorized access attempts, or maintenance needs, improving communication and response times.
6. Enhanced Security: With advanced locking mechanisms and the ability to track access history, smart lockers can offer enhanced security against theft or unauthorized access.

The proposed algorithm method:

model - based reflex agent

The model-based reflex agent is an intelligent agent that operates based on a model or representation of the world. It follows a set of predefined rules or condition-action rules to make decisions and take actions.

- 1- It perceives the current state of the environment through its sensors.
- 2- It constructs an internal model of the environment based on its perception.
- 3- It applies predefined rules to the current state to determine the appropriate action.
- 4- It selects the action based on the rules and its internal model.
- 5- It executes the selected action using its actuators.
- 6- It updates its internal model based on the new perception.
- 7- It repeats this cycle of perception, model construction, rule-based decision making, action selection, action execution, and model update.

By maintaining an internal model, the agent can reason about the effects of its actions and make more informed decisions. This approach allows the agent to respond effectively to changes in the environment and handle complex decision-making tasks.

Properties of Task environments :

- Multi-Agent: A multi-agent environment involves multiple agents that are capable of perceiving the environment and taking actions. These agents can interact with each other, either in a cooperative or competitive manner, and their actions may affect the state of the environment.

- Deterministic: A deterministic environment is one in which the next state of the environment is completely determined by the current state and the actions taken by the agents. In other words, there is no randomness or uncertainty involved in the outcomes of actions.

- Sequential: In a sequential environment, the actions of the agents are taken in a sequential manner, one after another. The outcome of an agent's action can influence the subsequent actions and the overall progress of the task.

- Static: A static environment is one that does not change while an agent is deliberating. The state of the environment remains constant during an agent's decision-making process, regardless of the actions taken by the agent.

These properties collectively describe certain characteristics of the task environment in which smart locker. Understanding these properties helps in designing and analyzing intelligent agents and their interactions within a university environment.