**Current State of Arts:**

* Smart House (Home Automation) là gì? Nó liên quan gì đến IoT? Cách thức hoạt động của Smart House.

Home automation is the automatic control of electronic devices in your home. These devices are connected to the Internet, which allows them to be controlled remotely. With home automation, devices can trigger one another so you don’t have to control them manually via an app or voice assistant. For example, you can put your lights on schedules so that they turn off when you normally go to sleep, or you can have your thermostat turn the A/C up about an hour before you return to work so you don’t have to return to a stuffy house. Home automation makes life more convenient and can even save you money on heating, cooling and electricity bills.

Home automation can also lead to greater safety with Internet of Things devices like security cameras and systems.

All home automation devices are IoT devices, which can be automated to trigger one another. So while IoT refers to the devices themselves, home automation is what you can do with the IoT devices to make your life just a tad bit easier.

A smart home’s devices are connected with each other and can be accessed through one central point—a [smartphone](https://www.investopedia.com/terms/s/smartphone.asp), tablet, laptop, or game console. Door locks, televisions, thermostats, home monitors, cameras, lights, and even appliances such as the refrigerator can be controlled through one home automation system. The system is installed on a mobile or other networked device, and the user can create time schedules for certain changes to take effect.

Smart home appliances come with self-learning skills so they can learn the homeowner’s schedules and make adjustments as needed. Smart homes enabled with lighting control allow homeowners to reduce electricity use and benefit from energy-related cost savings. Some home automation systems alert the homeowner if any motion is detected in the home when they're away, while others can call the authorities—police or the fire department—in case of imminent situations.

Once connected, services such as a smart doorbell, smart security system, and smart appliances are all part of the [internet of things](https://www.investopedia.com/terms/i/internet-things.asp) (IoT) technology, a network of physical objects that can gather and share electronic information.

Home automation works on three levels:

* Monitoring: Monitoring means that users can check in on their devices remotely through an app. For example, someone could view their live feed from a smart security camera.
* Control: Control means that the user can control these devices remotely, like panning a security camera to see more of a living space.
* Automation: Finally, automation means setting up devices to trigger one another, like having a smart siren go off whenever an armed security camera detects motion.

**Appliances:**

Tôi thấy ở trong đề bài trên Canvas nó có gợi ý là về automated coffee machine với automated parking gì đấy. Thì tôi lấy luôn cái ý tưởng ở đấy nhé.

**Automated coffee machine:**

Coffee makers are a popular tool in kitchens around the world—whether they are simple, pour-over funnels, Keurig K-cup machines, or multi-function units that grind beans, froth milk and serve up a hot cup of morning ‘Joe’ or even a cold brew.

The global increase in disposable income spent on coffee is increasing the overall demand for coffee machines of all types, according to Goldstein Research in New York. The analyst firm forecasts that the worldwide coffee machine market is set to reach $4.25 billion by 2024.

But it will be the rise of the smart coffee maker, in particular, that generates “massive revenue” for manufacturers in the next few years, reports New Jersey-based HTF Market Intelligence Consulting. Coffee makers become smart with well-designed mobile apps that connect to the internet, enabling consumers to monitor and control their coffee-making operations with new levels of convenience and precision.

So far, HTF says, tech-savvy consumers have been drawn to Wi-Fi-enabled smart coffee makers, which account for a major portion of the overall market share. Most of today’s smart coffee makers come with their own smartphone or smart speaker apps that allow you to choose certain drinks to brew while also adjusting the amount of coffee, milk and portion size.

**Ví Dụ:** Keurig K-Elite K Single Serve K-Cup Pod Maker, Hamilton Beach 49350 Smart Coffee Maker with Echo Dot, Keurig K-Mini Coffee Maker

**Methods:** These smart coffee machines tend to have the same working methods. They requires their own applications on smart phones. Using the Wifi connection as the bridge between the machine itself and the app that users can interact with, users can easily control the machine in whether voice, distance control through apps, …

**Automated Parking Door System:**

An Automatic sliding door System using an infrared sensor was developed. It uses a sensor, a control unit & drive unit to open and close doors at the entrance of a public building. The primary aim of this research work is to learn in details about how the automatic door system works and to understand the concepts involved. The secondary aim is to fabricate a simple circuit model to show how the system works. The main activities involved in this work are the research done on how the automatic door works, sketching a detailed circuit & then fabricating a simple model.

Sliding door is a type of door which opens horizontally by sliding, whereby the door is either mounted on or suspended from a track. Types of sliding doors include pocket doors, Arcadia doors, and bypass doors. Sliding doors are commonly shower doors, glass doors, screen doors, wardrobe and the system can also be done and implemented in the building of school, hall, auditorium, banks, shopping malls, various departmental buildings and they can be extremely useful in a wide variety of environments. Automation is the art of making processes or machines self-acting or self-moving, it also pertains to the technique of making a device, machine, process or procedure more fully automatic, it is a self-controlling or self-moving processes. Automation in the electrical, electronics and computing world has grown rapidly of which it dates back to 1940 when the first electronics computing machine was developed. This has aided humans as it basically reduces/eliminates human intervention, of which automatic sliding door also makes the list of automation in the electro-computing world. An automatic door is an automated movable barrier installed at the entrance of a room, building or space to control and restrict access or provide privacy. Also an automatic door indicates a door that opens on its own as a moving object approaches it. It is an electro-mechanical door that has undergone the process of automation. The reason for making the sliding door automatic is to allow pedestrians to gain easy entrance in and out without having anyone to keep opening and closing the sliding door.

**Methods:** There are three methods by which an automatic door is activated. A sensor detects traffic is approaching. Sensors for automatic doors are generally:

* A pressure sensor - e.g., a floor mat which reacts to the pressure of someone standing on it.
* infra-red curtain or beam which shines invisible light onto sensors; if someone or something blocks the beam the door will be open.
* A motion sensor which uses low-power microwave radar for the same purpose.
* An electronic sensor (e.g. based on infra red or radio waves) can be triggered by something that someone carries, or is installed inside a vehicle. These are popular for garage doors.
* A switch is operated manually, perhaps after security checks. This can be a push button switch or a swipe card.
* The user pushes, or pulls the door, once the door detects the movement it completes the open and close cycle. These are also known as power-assisted doors.

In addition to activation sensors, automatic doors are generally fitted with safety sensors. These are usually an infra-red curtain or beam, but can be a pressure mat fitted on the swing side of the door. The purpose of the safety sensor is to prevent the door from opening or slow its speed if an object is detected in its path whilst opening and to prevent the door closing or reactivate it if an object is detected in its path.

**Automated Cleaning Robot:**

**Text

Description automatically generated with medium confidence** **A picture containing text

Description automatically generated** Graphical user interface, text, application

Description automatically generated

**Limitation:**

* **Costs:** IoT devices are certainly more expensive than their non-WiFi-connected counterparts. For example, the [average smart bulb costs](https://www.security.org/smart-home/smart-lights/costs/) around $32, while the average regular light bulb is about $5. Of course, you have to factor in the additional features like remote control, dimming, 16 million different colors and voice integrations, to name a few, but overall, home automation isn’t cheap, depending on where you shop.
* **Security issues:** It’s scary but true: anything that has to do with the Internet, whether it’s browsing Etsy for a new bedspread or checking in on a motion notification from a smart security camera, can be hacked, and that includes IoT devices. Unfortunately, we’ve seen a fair share of hackings and security breaches from large tech companies that manufacture IoT devices; Ring’s cameras, for example, were famously hacked, allowing the live feeds to be compromised.7 Of course, this is an issue you wouldn’t have with devices that aren’t connected to the Internet, but if you want IoT devices, you’ll have to adhere to some best digital security practices, detailed later on.
* **New technology:** Since IoT is a relatively new technology, you may run into some bugs, like devices having trouble connecting to the Internet or experiencing lag, depending on the device’s make and model.
* **Surveillance:** If privacy is a huge concern, then smart security is probably not for you, as users can livestream footage from the camera’s respective app.

**Opinion:** Đoạn này thì nó là về cảm nhận của ông về mấy cái kể trên. Tóm gọn lại thì tôi có thể chia cho ông như này:

Cảm nhận của ông về mấy cái ứng dụng nói trên. Nó tiện lợi như nào, nó nâng tầm cuộc sống, giúp mình đỡ ra sao bla bla. Xong về mấy cái methods thì ông có thể nhận xét là nó hay và tuy là những cái ứng dụng này nó rất là nhỏ nhưng lại giúp rất nhiều cho cuộc sống của con người. Cố kéo dài ra vì phần này ăn điểm.

Lợi thế của IoT trong mảng Smart Homes. (Ông tìm mấy cái này trên mạng kiểu gì cũng có)

Hạn chế của Smart Homes (Phần này ông có thể tóm gọn cái phần Limitation ở trên tôi ghi và ghi lại vào phần này)

Khẳng định là sự áp dụng của IoT vào Smart Home có rất nhiều tiềm năng và có thể mang đến những cải tiến cực lớn cho cuộc sống con người. Nhưng dù sao đi chăng nữa thì những mặt hạn chế vẫn cần phải có sự phát triển để giảm bớt những hạn chế đó. Tuy vậy nhưng mà lĩnh vực IoT, đặc biệt là ở mảng Smart Home rất là triển vọng và xứng đáng để đầu tư.