COMP 1649 Human Computer Interaction and Design

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Coursework : COMP 1649

Submission Date: 23/04/2022

Contents

1. Intro before I enter the project

The goal of this course is to develop an idea and prototype for a system that allows anyone to transmit movies and videos to passengers in a vehicle's back seat. I constantly studied how ordinary customers perceive my new car navigation and entertainment system's capacity to aid them with those jobs during the early stages of development. I researched Human Interaction Design Processes & Principles from numerous papers, books, and websites to give a better user experience from smart gadgets and related apps. Adopt a framework that supports in attaining user goals and giving a better user experience, based on my project study. My final product will appear proper and more attentive to user goals as a result of my study. The goal of this course is to develop an idea and prototype for a system that allows anyone to transmit movies and videos to passengers in a vehicle's back seat. I frequently noticed how the ordinary user regarded the system's potential to allow anyone to transmit movie and video content to passengers in the rear of a car during the early stages of development. My new job entails aiding them with those responsibilities. I researched Human Interaction Design Processes & Principles from numerous papers, books, and websites to give a better user experience from smart gadgets and related apps. Adopt a framework that supports in attaining user goals and giving a better user experience, based on my project study. My final product will appear proper and more attentive to user goals as a result of my study. In the meanwhile, the change requests are causing me concern. I will be able to describe my work and give recommendations for the project's future development after I receive this paper. The system will be deployed to a specific area and run on a mobile platform that will be imitated.

As an FPT student, I was tasked with designing a prototype for a system that would allow anyone to stream movie and video content to passengers in the back seat of the vehicle. Other gadgets, such as music players and GPS systems, can be transmitted content and video to

passengers in the back seat of the vehicle.

2. Platform for my project

A touch screen for your car is an intriguing technology in today's culture. It saves you time by displaying practically all information, such as warnings and difficulties with your vehicle that might otherwise take a long time to resolve. handcrafted. This is a worthwhile investment because it improves the appearance of your console.

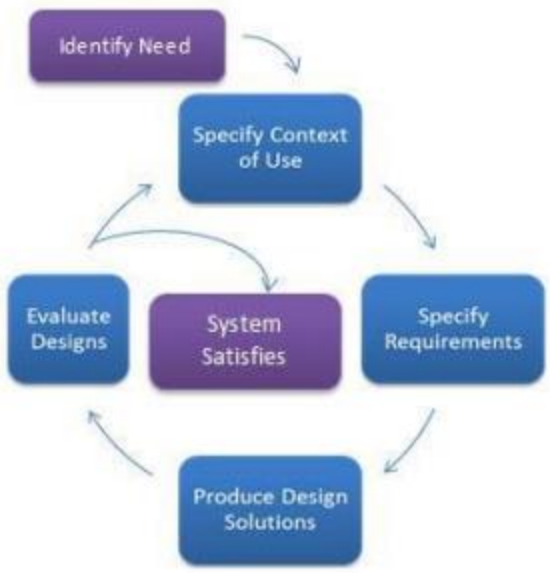
The wide display and smart touch screen allow you to see clearly without taking your eyes off the road, ensuring your safety and lowering the danger of an accident. If your vehicle lacks a touchscreen, you may always update and add one to give yourself a fresh driving experience. You may choose the best touchscreen for your vehicle and have it installed by a professional.

2.1 What techniques and frameworks are required for Interaction Design?

A set of guidelines supplied by HCI for anybody involved in the design, development, evaluation, or use of an interaction system is known as an interaction design framework. You can do more than just decrease project costs by using a framework in the interface design process; you can also improve product quality and make control as rapid and precise as possible.

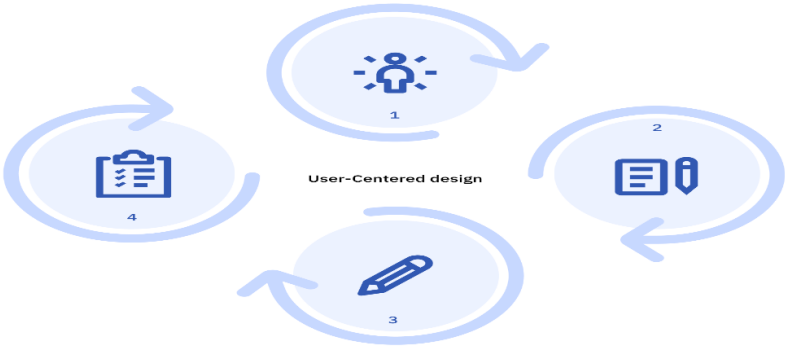
2.2 User-Centered Design (UCD):

Users' requirements are prioritized by designers. The team will design in connection to the user, fulfilling their wants and using design strategies such as interviewing, observing, and asking questions to produce a product that is truly usable for them (Chamberlain, Sharp, & Maiden, 2019).



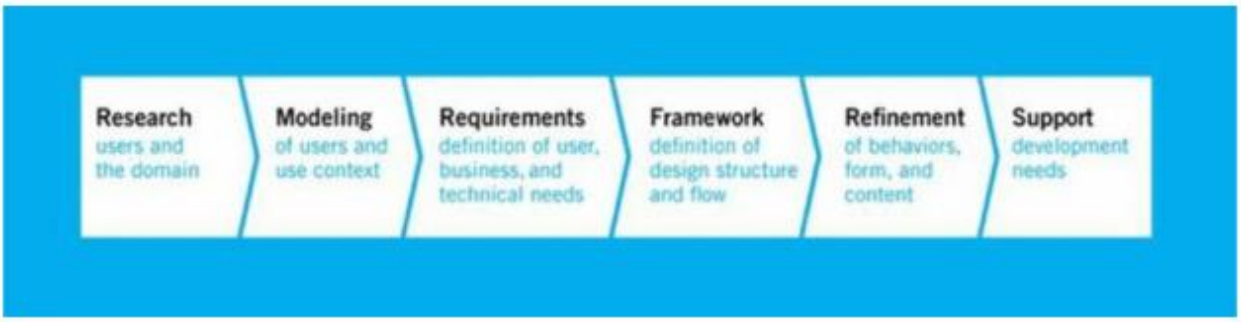
To understand some user data into the design is very difficult and the whole process takes more time so the whole process can be expensive besides UCD framework gives more efficient product

A design process in which the needs and wants of the user can be understood, so that you can understand the users, what they want and what they don't want from your design by designing it, then human design user centricity.User experience but also increase development efficiency because we not only improve and listen to user wishes but develop more.User interaction is very important,it helps We understand what users want and don't want.



Target-oriented design

At the heart of Alan Cooper's work will be the goal-oriented design process as a design framework where the user, the end user, and the stakeholders both expect and expect a goal from a proposed product. During this process, defining the user's goals by investigating, understanding the user's needs, and how the product can satisfy them (Dalrymple, 2014), Alan Cooper tries to meet them well. best for users. Eliminate unrealistic goals, measure the plan, then design and optimize the measurement plan

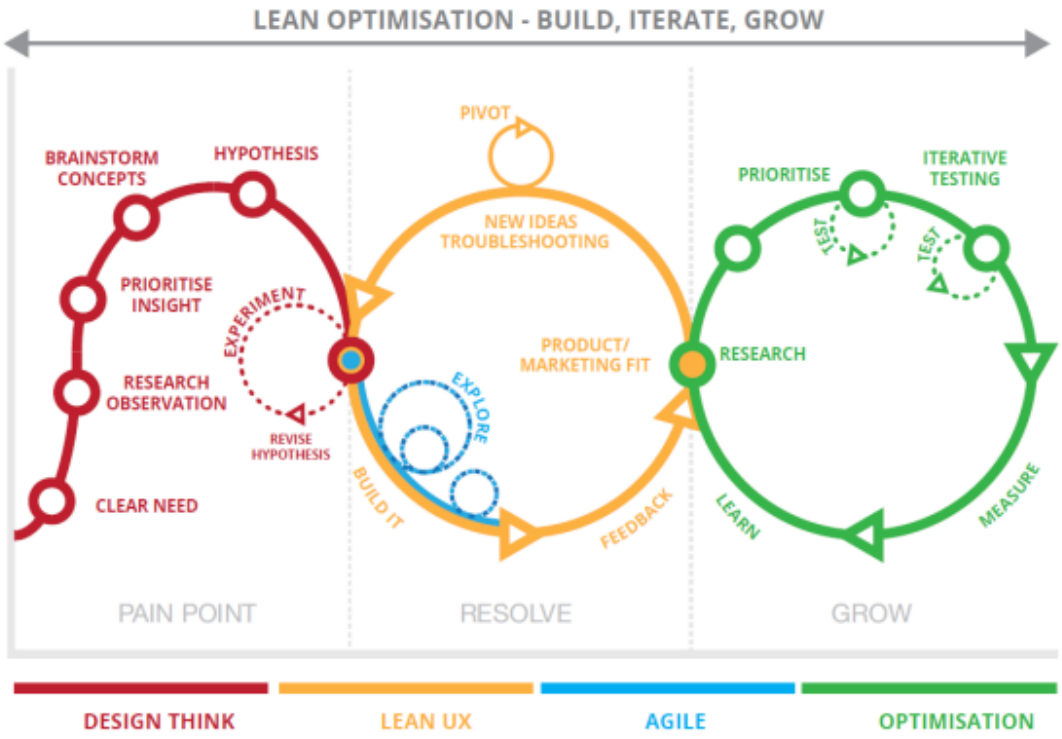


It's a lengthy process for any interaction design. The goals of both users and stakeholders may not be the same

Leans UX/UI

Based on lean UX/UI, a user-centered and interactive design process. In terms of this structure, maintain getting user feedback, checking user data from the results, and continuing the process. Laura Klein continues the story. Based on the basic concepts of this framework, identify the essential activities of a business and produce ideas that might help enhance that

firm, locate consumer problems and solutions, and assess outcomes data on a regular basis.



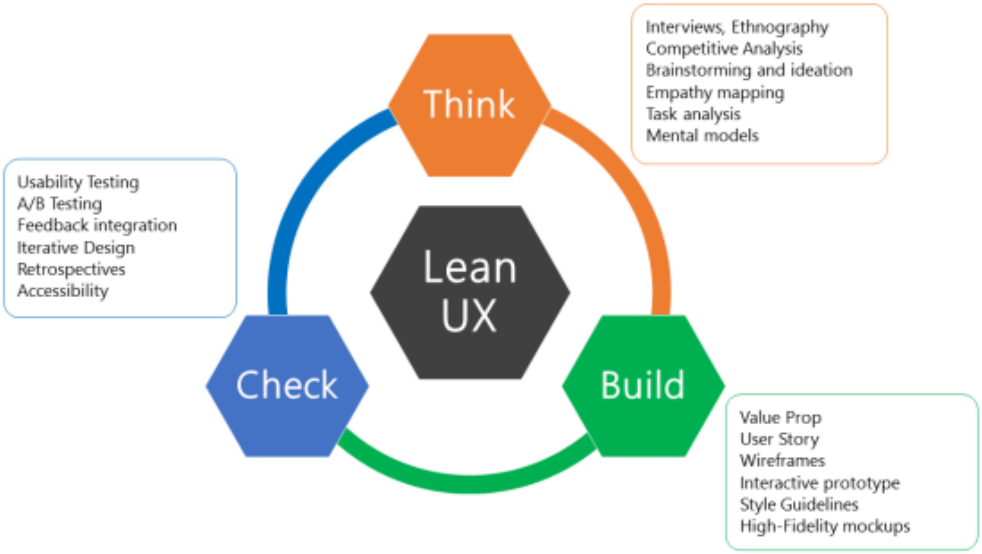
The framework's process is collaborative work where the design phase is carried out in iterative and parallel ways. It focuses more on core request and customer's comment. By prioritizing Lean suggestion UX can deliver the product in short time.

Chosen Frameworks

Out of the three frameworks discussed above, I choose Lean UX/UI to produce the best design outputs for the field's end-users.

Finding the greatest solution to the assumption I made to develop smart audiences for a certain purpose is the first step in implementing lean UX. I'll begin my course by conducting user research to determine who my product's target consumers are and what they expect from it. My study will lead me to user requirements. After prioritizing the requirements, I will begin interaction design, in which other sorts of prototypes will assist in obtaining user feedback. The necessary changes will be made until the product is complete, based on the interface design

and the changes' execution.



Justifications

Because it is user-centered and goal-oriented, Lean will be less expensive than both frameworks. A technique for developing with agile design thinking and the lean UX development philosophy Rather than focusing on lean UX, collaboration focuses on delivering items swiftly and effectively. An interaction design method, in compared to other design frameworks, facilitates in the attainment of user goals. Based on those observations, I believe Lean UX is a superior paradigm than others for achieving rapid deployment, collaborative review, and, most importantly, the development of a powerful Smart car Object solution.

What is Interactions Designs:

The practice of creating user and product interactions is known as interaction design (IxD). We normally refer to software, such as a website or an application, when we talk about interaction design. The purpose of interaction design is to create a product that assists people in achieving their goals. Find out what the customer wants, evaluate and come up with a solution, build a prototype, and put it into action are the five stages in the interaction design process. Designers use it to solve challenges in the interaction design process. These five stages will assist you in creating intuitive, recognizable interfaces and enhancing user experience.

I believe that interaction design is appropriate for my project because UCD requires user participation, which must be repeated many times, and we can reach the general public using the two frameworks I described earlier. Furthermore, we consider our customers' needs at the start of product design or development, which not only helps us understand the customer's requirements properly, but also reduces the time and cost that will be spent was interviewed first by IxD.

1. Recognizing user demands: In order to comprehend our consumers' needs, we must interview them, conduct surveys, and then come up with existing solutions. It assists us in determining what people want and when to use it.

2. Analytics: we acquire information from users that allows us to collect and arrange data.

3. Appropriate feedback will be provided to help users better understand how to interact with it, and we will make changes based on user feedback.

4. Prototyping: we present our product concept to our users and ask them to test it or present it to product reviewers.

5. Your work will be completed and deployed.

Conclusion

Each framework has its own set of benefits and drawbacks. I believe I would iterate over the four interaction design activities of analysis, design, prototyping, and evaluation using the user-centered design (UCD) cycle. Because customers are involved in the design process through research and surveys, the most user-friendly design is achieved. User engagement, behavior, and opinions about the design will define the design's success.

We will dive into the definition of IxD

Interaction design (IxD) is the process of designing interactive goods and services that takes into account how users will engage with the product.

- "Interaction design" refers to how humans engage with non-digital objects and is centered on the work of a UX designer (i.e. the design of human interactions with digital items).

Designers in IxD work in five dimensions:

1D Words: The semantics or meaning of user interactions, as well as the type of interaction, are captured in this dimension. Words are effective because they can be understood quickly and implicitly while yet having a significant impact on us. A single word can have many diverse meanings, and words can be interpreted in a variety of ways. As a result, we must employ vocabulary that is known to our target audience, reflects the actions they imply appropriately, is delivered in a pleasant tone, and is consistent across all products.

This dimension relates to non-verbal product features such as typography, diagrams, icons, and other visual representations. Because we can absorb images as quickly as words and extract meaning in a split second, these elements are just as powerful as words. Hundreds of 2D visual representations have been stored in long-term memory, allowing humans to understand screens on the fly as the design allows, resulting in a better user experience. 2D visual representations include icons, background/foreground color contrast, borders, and the usage of visual hierarchy.

Tangible control devices include computer keyboards, mice, touch screens, joysticks, gaming controllers, and keyboards. 1D words, 2D visual representations, and 3D physical objects define user interactions, providing tools and solid feedback to assist users in controlling their activities and achieving their goals.

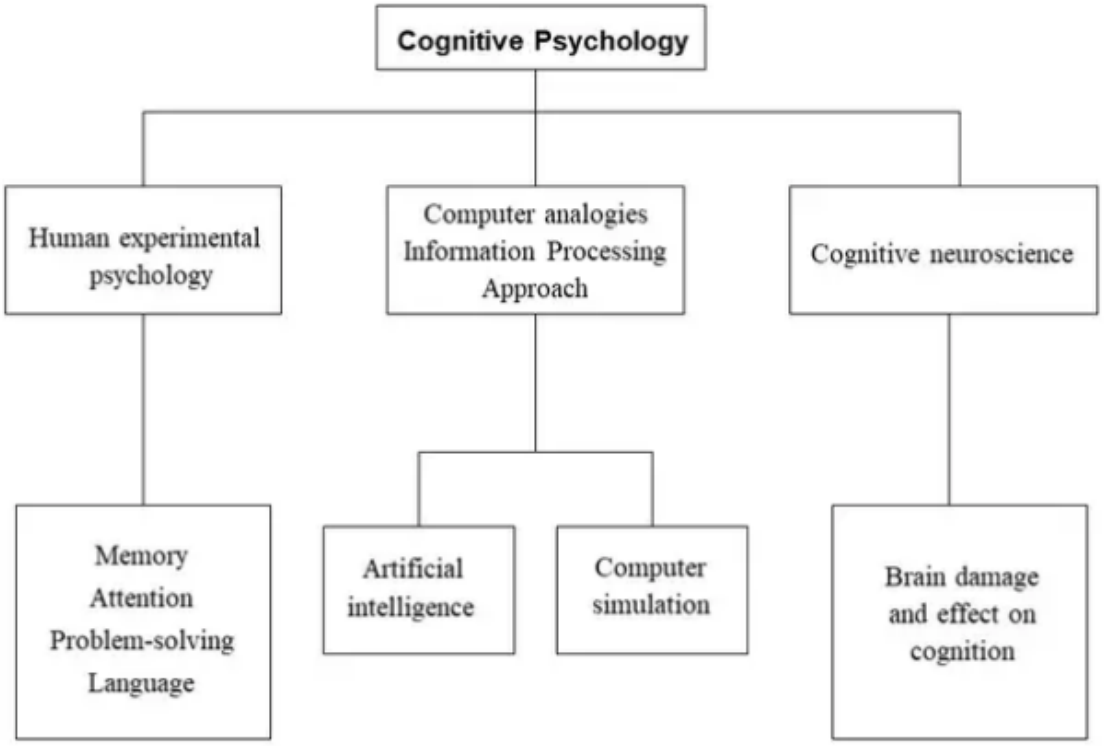
4D Time - This refers to how much time users spend interacting with and using the first three dimensions, as well as how long they can keep track of their progress. 4D Time also includes audio, video, and animation, each of which provides a unique manner of delivering information and improving the user experience.

5D behavior includes things like actions, feelings, activities, and presentations. To put it another way, this is how our program functions. We can get a success message with a summary after we finish a task, swipe, or anything. Adaptable and user-friendly behavior must be implemented.

2.3 Awareness and understanding of psychology

Holistic psychology is the study of a person's mental abilities, such as problem-solving, memory, comprehension, language, remembrance, and how people see things. rank. A polisher's understanding of cognitive psychology is crucial in interface design. The user interacts with the system by using his cognitive memory. The common interface allows users to learn more about the system. These studies of cognitive processes assist the designer in creating a better product. A lack of understanding of cognitive processes could lead to poor product design. Cognitive processes are the ways in which the human brain takes information and processes it to produce reactions such as attention, memory, and perception. This cognitive process assists

in the production of interactions that aid in the improvement of the user's cognitive thinking.

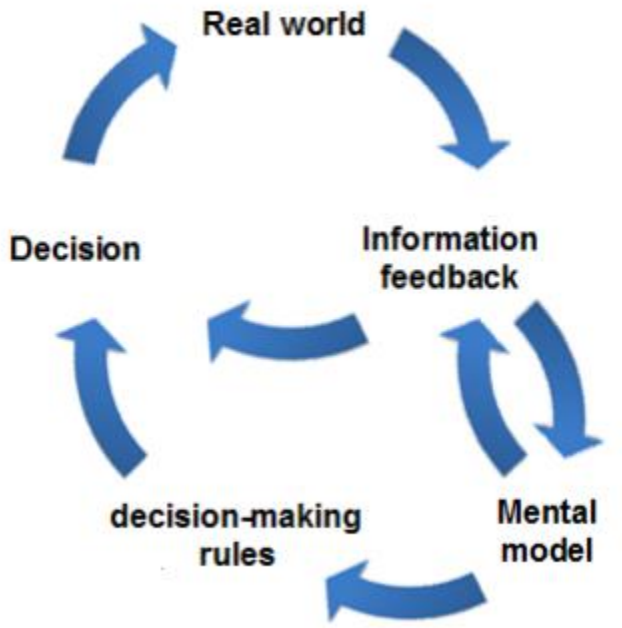


The study of cognitive, memory, problem-solving, emotional, and learning processes is known as psychology. Developers must first understand user behavior and design restrictions before constructing an interface, and cognitive psychology is integrated with cognitive models such as building the best interfaces. User interaction and control are both advantageous. Cognitive psychology is required for people to comprehend and understand the world in order to effectively change it. For example, when learning a document, you must be interested in it, perceive and recognize it, read it, reflect on it, and try to remember it.

What effect does perception have on interaction design? The fundamental concern of today's designers is user design; in order to understand user intent, designers must reach out to the user and get to know them. They use the app that appeals to them the most in terms of color and appearance on the user side. The colors and photographs are of good quality because the project I'm working on is usually oriented toward guys. The color of the peony makes any man feel luxurious and energized.

Mentals modell

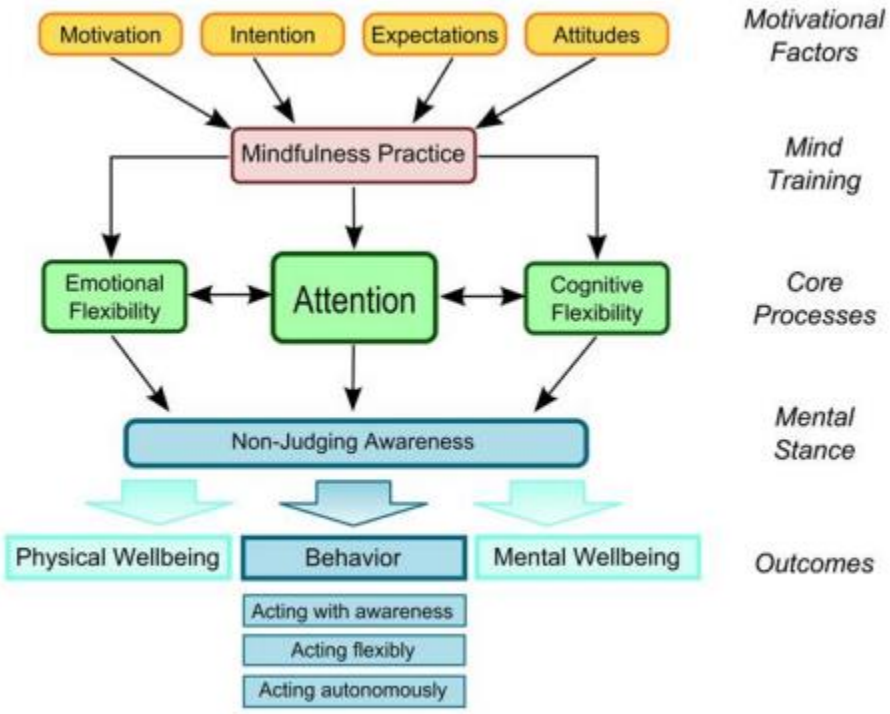
Any design process must include an understanding of the user's mental model. The goal of mental modeling study is to see if users have a basic understanding of the system (Laird, 1983). This informs a designer on how a user perceives information about using a comparable or existing product. The powder can be used to make a useable product after it has been stabilized by the metal model. A complicated boundary system or a lack of user awareness can raise the chance of product displeasure. I'll keep my target user's mental model in mind as I construct my system.



Attentions

One of the most fundamental cognitive tools for user-system interaction is attention. After each piece of information is detected, the smart gadget will have light and sound effects to provide interactive feedback. To capture visual attention, use information on the screen or vocal interaction. Various icons, colors, and animations will be employed to catch visual attention in the accompanying mobile application. Users may become confused if those deliberate processes are not in place, and they may control the same operation multiple times. Such attentional responses would have the effect of enabling unverifiable device activities and

system control.



Memory

Instead of regaining user memory, learn how to offload it. One of the most important aspects of psychological perception as well as human daily existence is information storage. Long-term and short-term memory are both part of our memory. By providing memory access cues regarding system operation, smart gadgets lessen the user's memory load. Users, for example, do not need to memorize all of the essential product information. They can easily scan the information on the screen or use voice search to locate it. The contrasting icons and colors will make the gadgets and applications of both designs easy to grasp. Those instructions will assist the user in recognizing rather than recalling system functions.

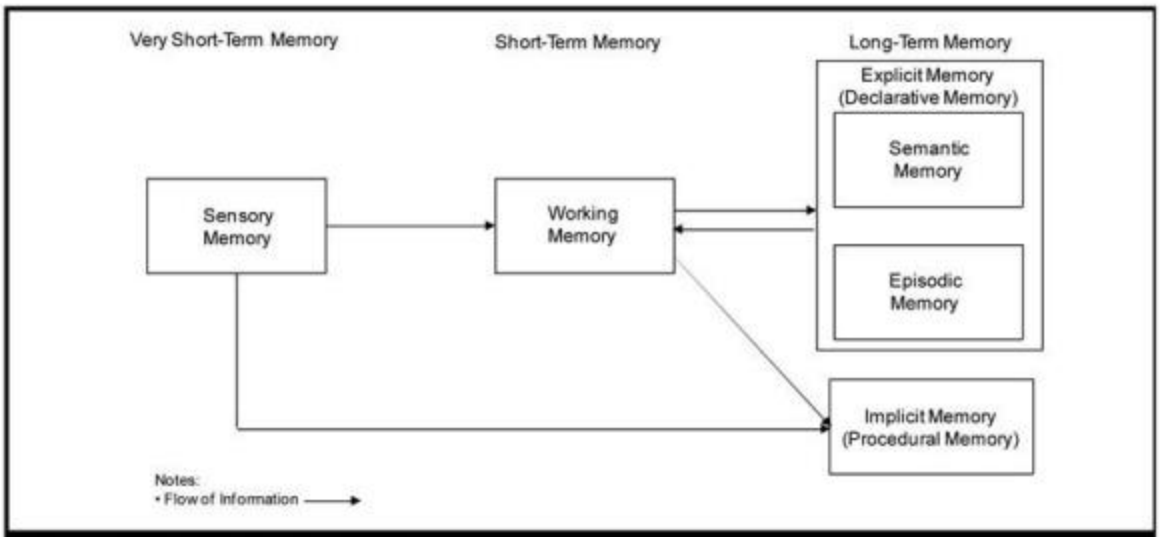
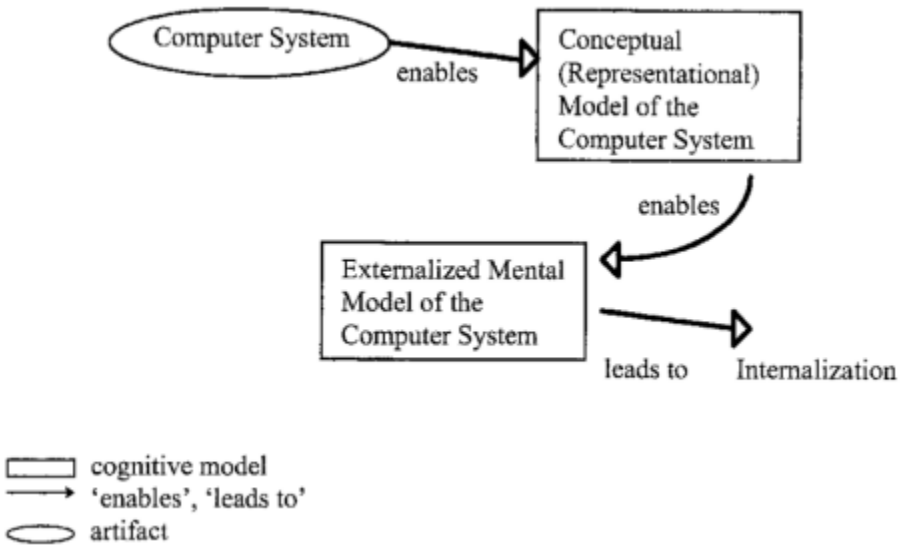


Figure 1. Process Model of Memory

External perception

External perception refers to the graphical interaction or internal perception of the user's mind about any function. The impact of this cognitive process will make it easier for the user to understand the system or its responses. Images, colors, animations and more. is one of usable external perception removers. Where the user can define a function with a wildcard or a text color.



The approach to how a person/user interacts with a design is called interaction design. The user's interaction with the design will have a positive or bad impact on the user experience. Interaction design is divided into five dimensions:

1D - Words: Words, like other images, are commonly employed to describe messages to consumers. In this project, words are used to label the button and notify the user of the many types of information available on the screen.

2D - Visual: We utilize visuals and icons to describe and illustrate objects in addition to words to assist users in capturing their own moving route.

The user's physical engagement with the gadget is referred to as physics in 3D. Physical engagement will be required because the software will be run on a touch screen.

4D - Time: Refresh the image to see the user's vehicle distance traveled in real time.

5D - User Interaction: The user's interaction with the software is taken into account in the interaction design. To put it another way, how will the four components stated above interact to influence the product's user experience? Emotional feedback from users is taken into consideration in behavioral dimensions, resulting in fresh ideas for improving the user experience.

2.4 Knowledge of interaction design

On the remote controllers, which have been greatly improved, touch and speech options are now accessible. Users can manage the app remotely while watching YouTube by pressing a button on the remote or selecting a mic icon, which allows the app to record and make sound, and these modes are widely used in search. Without pressing a button on the remote, the person's voice will pick up on what the user says.

There will be two types of engagement modes on the smart device: speech and touch-enabled apps. In this section, I'll go through various modes briefly and how they'll be employed in my design.

In terms of my project, I prefer voice over click mode because click mode appears to take a long time when users have to press each sentence, therefore voice may be the best alternative for saving users time.

2.4.2 Types of interactions:

The platform user experience will be displayed based on how the user interacts with the system. Instructive, conversational, manipulative, and exploratory interactions are some of the most common. I'll go over each of the four sorts of interactions I mentioned above in further depth.

• Directions: When the user gives the system instructions. These can be done using command input, menu selection, or the touch screen, as well as speaking commands and pressing buttons to activate functions.

• Conversing: Conversing is a type of interaction in which a computer mimics the actions of a human. Users can talk into the interface or ask a query to which the system will respond.

This interaction makes it simple for users, particularly newcomers, to communicate with the system.

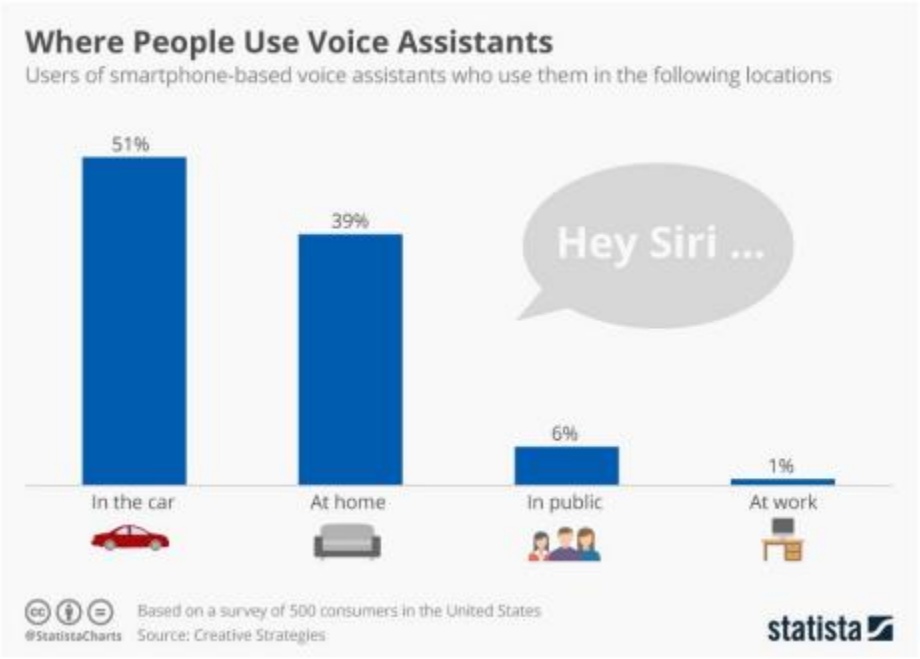
• Manipulation: When users manipulate virtual or physical items (by holding, touching, etc.), they will be more comfortable with how they engage with virtual objects.

• Explore: The user can physically move about and explore the virtual world that is being projected in front of them. A particular gadget, like as glasses or a headset, is frequently required for discovery. Assist users in exchanging information or creating virtual environments.

Voice modes

Voice mode is an interactive mode in which the user gives voice commands to the device. The device will have its own voice command function, and after pressing the button, the consumer will be able to begin speech interaction with the device. In voice interaction, the gadget will feature a built-in microphone and speaker to provide instant feedback and trigger vocal

commands from the user based on user actions from the device.



Touch modes

Touch mode refers to using the device's touch screen to interact with it. The smart device is controlled by a mobile application that may be accessed by touching the finger. The item will appear in the app after you select it. I'll keep the user's demands and preferences in mind while I create the touch screen interface. I'd increase the size of the most-used element so that the user can interact with it without touching anything else.

I also consider the size of the user's device's touchscreen, as the app will be used on a variety of touchscreen devices.

Types of interactions

This section explains how those interactions work and how I'd implement them in my system.

Tutorial

By issuing numerous commands, the user guides the system. Only user activities will cause the system to work. Products can be purchased using voice commands. This form of engagement is easier to comprehend and implement.

Chat

Chat engagement is similar to conversing with the system and can take the form of a question-and-answer session or a voice output. This form of interaction allows people with disabilities to control their purchases. The voice-activated smart device throwing system allows users to communicate. Chat interaction would be more appropriate for a virtual shopping software such as my project. This type of technology does not require users to have any special knowledge.

Work

The goal of manipulative interaction is to discover how real-world users do the same thing. Ben Shneiderman defines direct manipulation (DM) as a sort of manipulation in which digital objects are developed and dealt with in the same way that physical items are. Various icons in the software represent various actions. When the user uses such features, the scan and voice search buttons will work. Users will be able to see that they have complete control over the gadget as a result of this.

Detect

In interactive exploration, the user interacts with the virtual object tossing system. This type of engagement can be beneficial to virtual and augmented reality applications. I don't see much of a use for this type of interaction in this lesson, but I do discuss it in the further growth section.

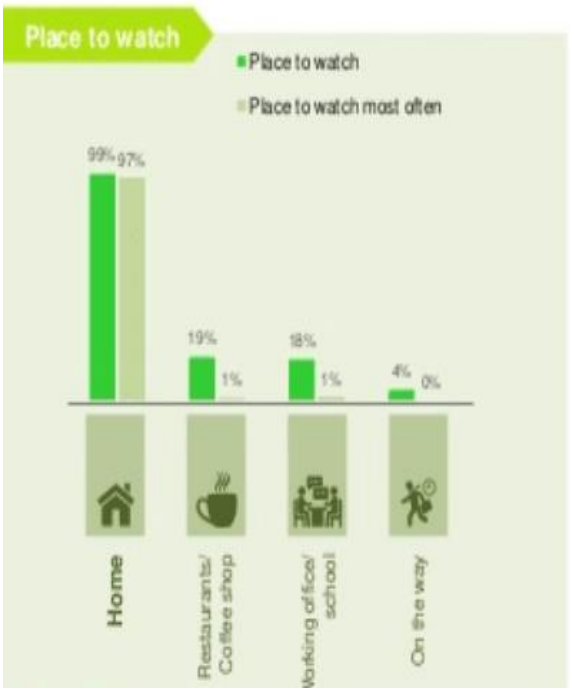
3 Design process:

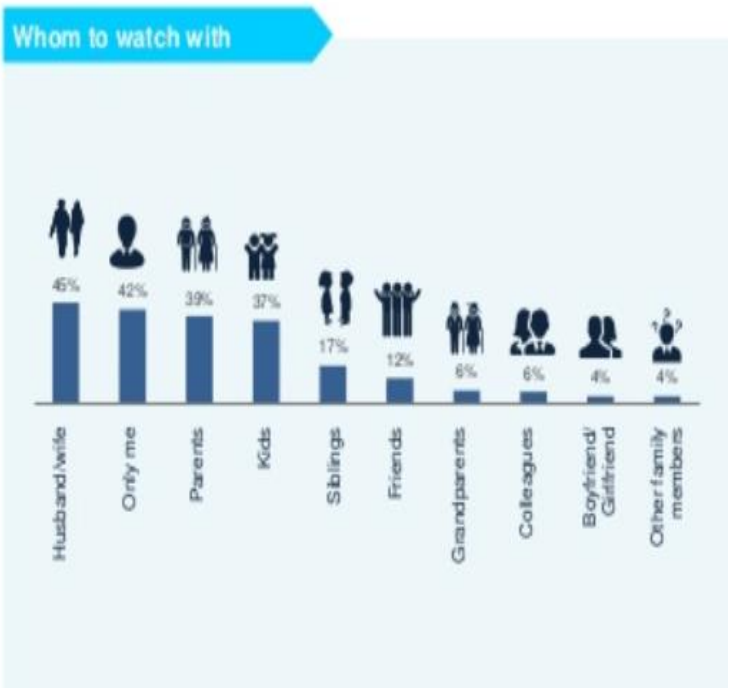
1 Research on interaction design:

- Currently, in order to contact customers, you must first determine the user's age, design intent, and gender. We may collect client feedback once the aforementioned has been determined.

Because everyone is at home during the epidemic and needs something to keep them entertained as they watch the news, everyone's need for entertainment is increasing. The target demographic includes male and females aged 3 to 65 who wish to watch movies, read the news, or listen to music in the car.

2 Different mode:





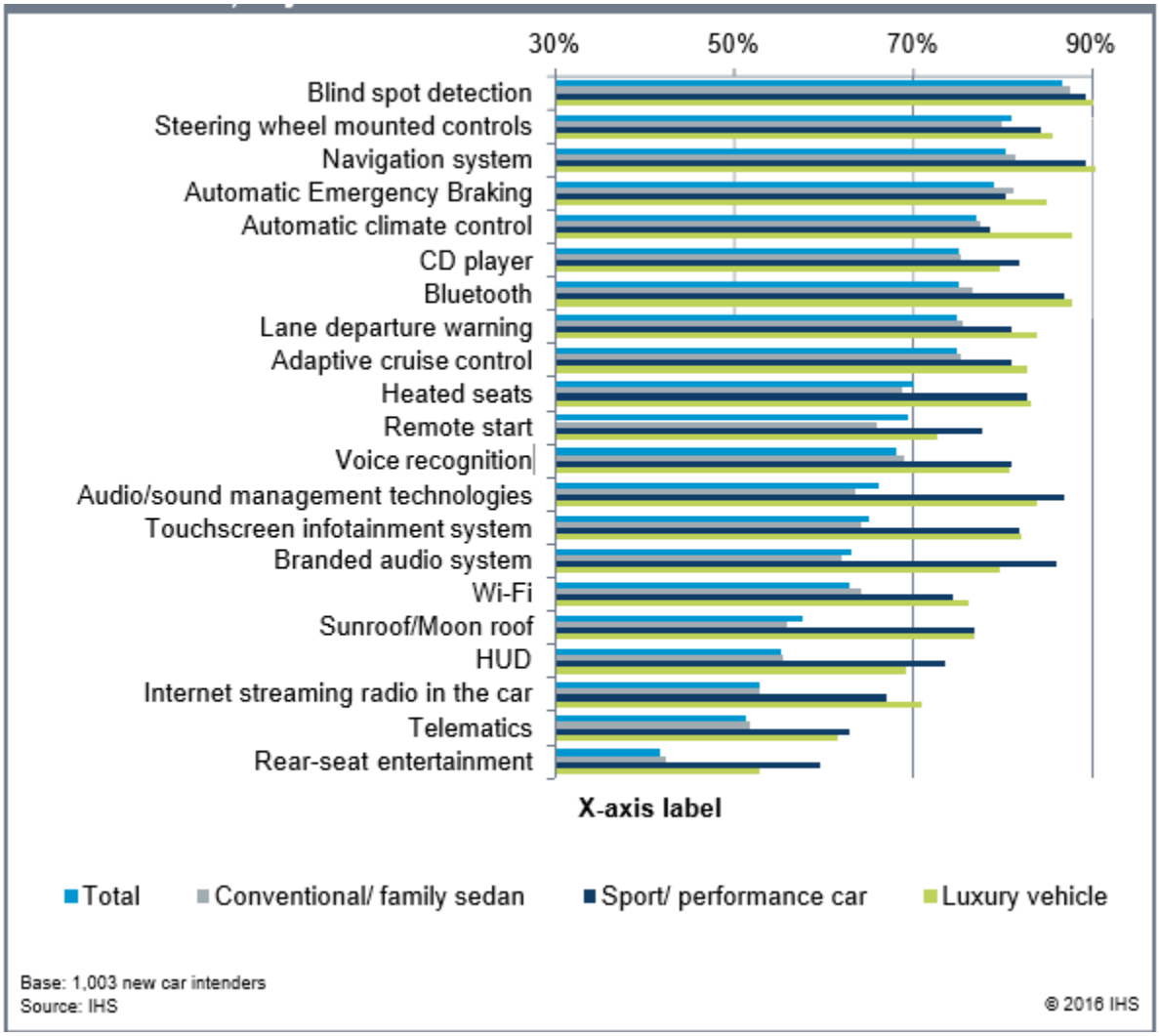
2.1 Conceptual Design:

Over the years, joysticks and other radical control options have been offered, but none have been demonstrated to work better than wheels and pedals. However, our automobile interiors have altered considerably in terms of our various car experiences over the last decade or so. Touchscreens have replaced buttons and knobs in the workplace, bringing the bright, high-definition dazzle of consumer gadgets into the workplace.

- In the past, car stereos were the only option. To listen to the radio, you'll need some type of physical media, a knob or a button, and possibly some sliders to change the EQ settings if you're very sophisticated. cup of suction Road maps have been obliterated by GPS devices, but small digital screens are beginning to appear in automotive center consoles as built-in substitutes.

As the capabilities of those screens improve, so does the desire to interact with them. Dedicated physical buttons have been replaced by the scroll wheel, trackpad and trackpad, and subsequently the touchscreen.

- While all new car buyers have high expectations for the right infotainment system and app connectivity, there's evidence that these buyers may not be satisfied when they finally get it. also get a car with such system



• A larger desire for premium audio, comfort, and in-car technology systems is seen in the interaction between luxury and sports/performance cars.

2.2 Personass:

- The main character is a man. Dang Pham Quoc Hieu, 23 years old, is a student during the separation period. Quoc Hieu goes on business trips to relax by watching movies on TV or watching news on Youtube. Because it needs high DVD screen quality so that the audience

doesn't want to type every letter. They can customize the entertainment system to their audience's liking that can be used to control their car's smart entertainment system.

- Subject is Hieu Dang, a 26-year-old woman, working in real estate business, visiting customers. During that time, I requested entertainment to reduce stress on my clients. For the long haul, I opted for a rear occupant entertainment system. Every time I access the infotainment system, it takes time for me to set it up on the car's display, so I use the remote control with buttons to instantly access the navigation system without having to go access menu.

2.3 Situations:

Pham Dang Quoc Hieu's character: Every 11 am, he turns on the news, the remote control turns on the channel of his choice. If you want to listen to music, say the remote control to receive. The entertainment system plays music to him.

- Character Hieu Dang: In the evening, open the entertainment system to find the location of the nearest customer's favorite program when friends come to the house, can both entertain and play games while doing housework and cooking.

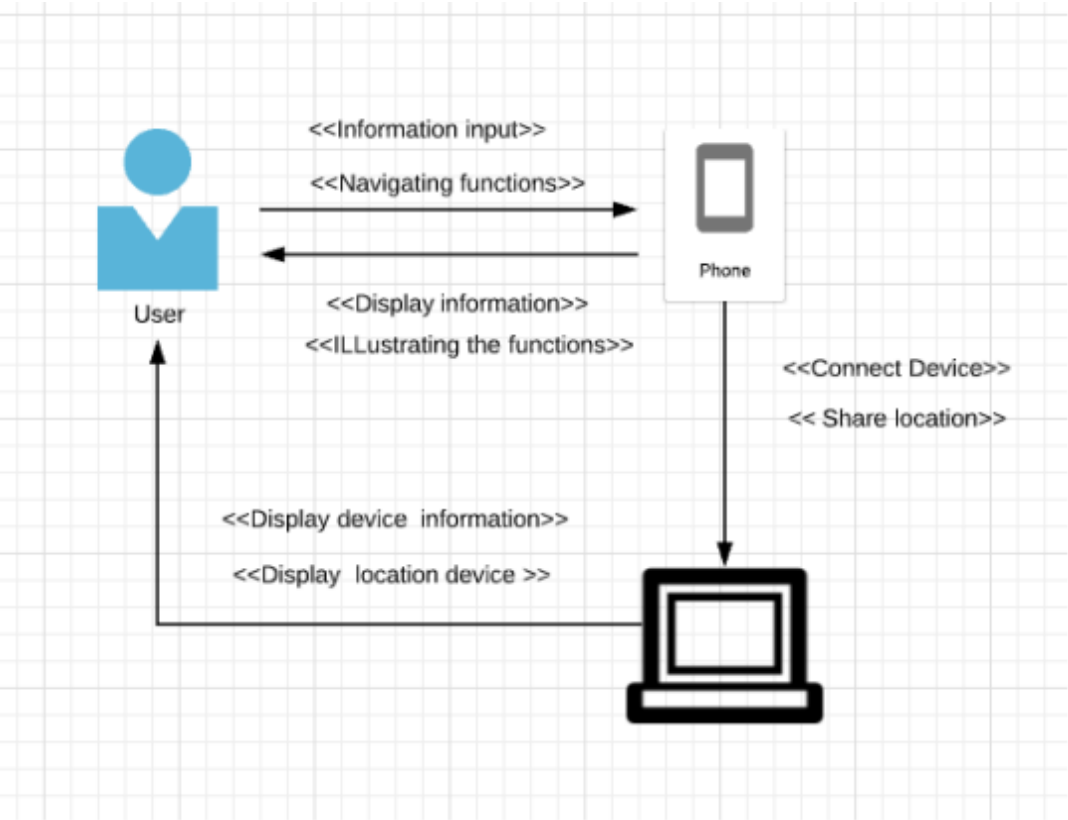
Requirements definitions:

Based on the above cases, we can list some criteria that match the needs of Quoc Hieu and Hieu Dang:

- Music system includes playback, next song, and pause functions.

- A video playback system is included in the entertainment system.

2.4 Model conceptual



3.Prototypee:

3.1 Evaluation of criteria.

Our designs are based on the User-Centered Design (UCD) methodology. It denotes that the user's experience is prioritized in design. The following prerequisites must be fulfilled:

- Usability - The product aids the user in achieving their objectives; the task is designed to meet and/or satisfy the user's needs.

- Effectiveness - Both the execution speed and the failure rate are statistically tracked and related to the user rate.

- Attitudes - User perceptions, sentiments, and opinions about the product, expressed in writing and orally.

3.2 Prototype.

- To make the prototype, I'm using axure, a design program. My prototype can be found here:

bài-hiếu.rp

3.2.1 First interaction.

- The initial prototype will be the device's home screen. The user can easily control six important apps with large icons, which is the first thing we notice.

These six apps were chosen based on how frequently they are used while driving:

- Maps: Whether commuting by vehicle, bicycle, public transportation, or foot, this program allows you to browse city maps and routes.

We can keep focused on the path for longer periods of time with the help of music. For some reason, music helps you focus when driving. Perhaps it's because most driving or commuting is tedious, and music allows me to "get in the present" while still entertaining me.

- Podcat: Podcat is a podcast about cats. Podcat is a web application that allows you to listen to audio files. Podcasts are similar to radio in that listeners can pick and choose the programs, information, or other content they want to hear at any time, without having to tune in, select a station, or wait.

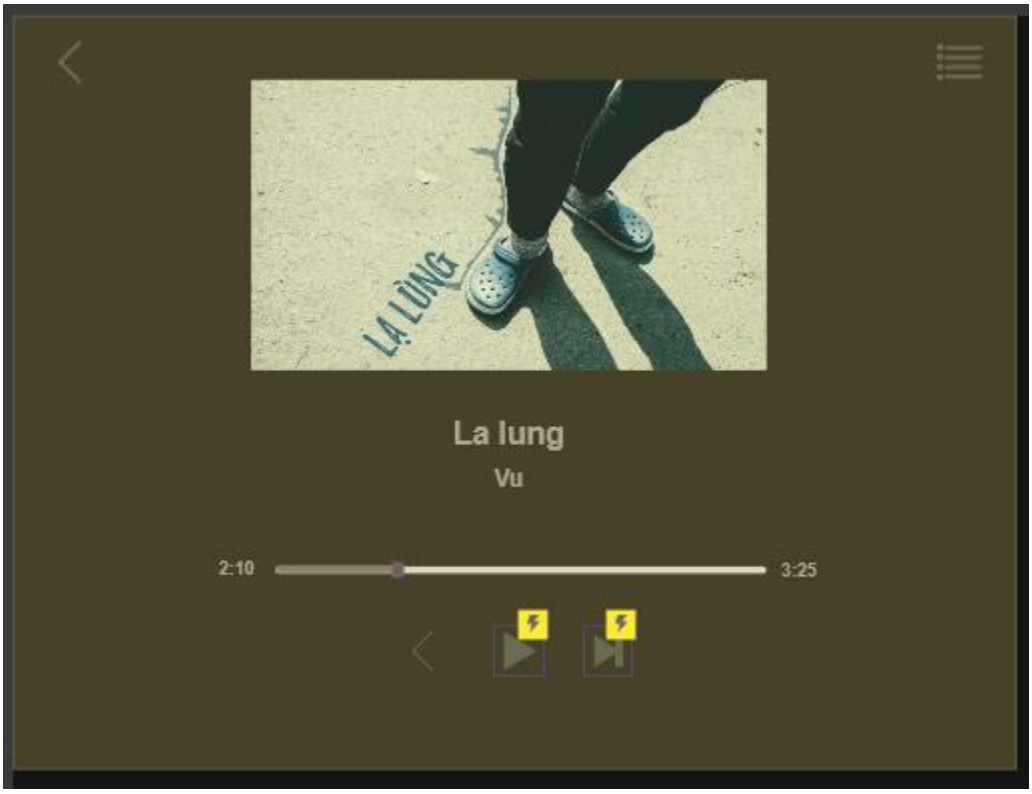
- Youtube: Youtube is the most popular video-watching platform on the internet today. You can use it to watch videos when you're not driving.

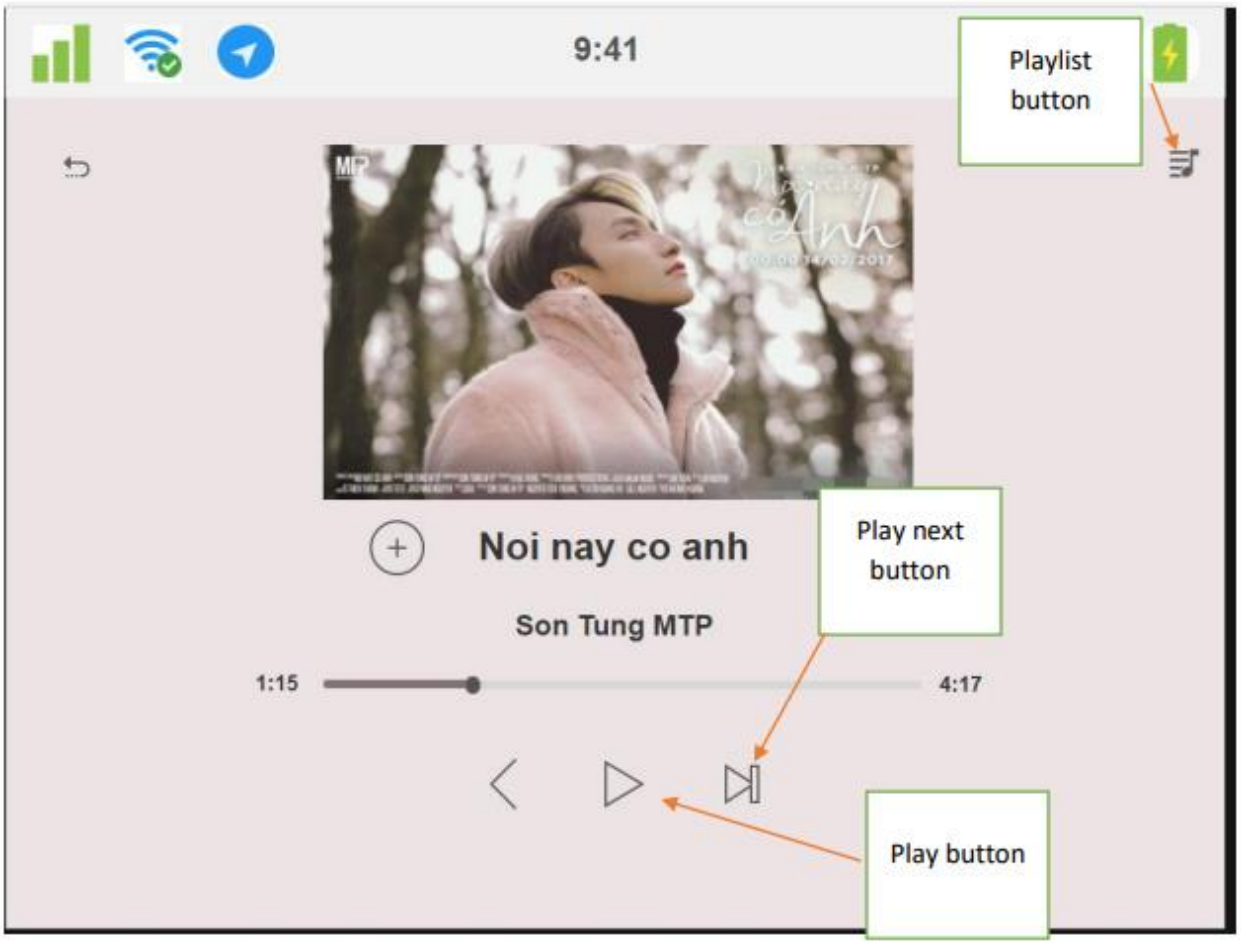
- Gmail: You may check your email while at work with Gmail. When you don't have your hands free, you can use it quickly.

- System modifications: The application aids you in performing system modifications.

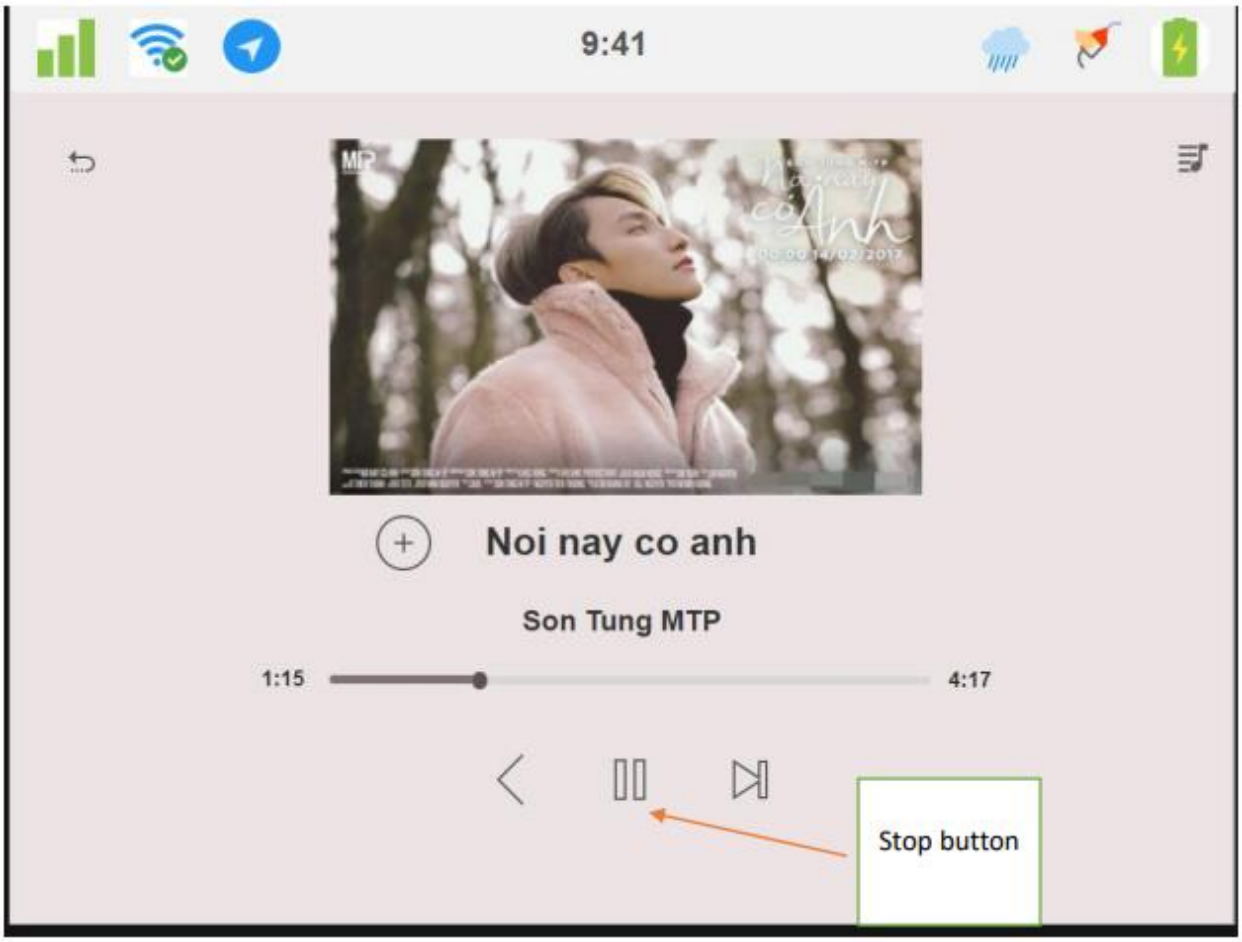
This research, on the other hand, is focused on rear-seat video transmission and in-car entertainment systems like Google Maps, Music, and YouTube.

3.2.3 Music

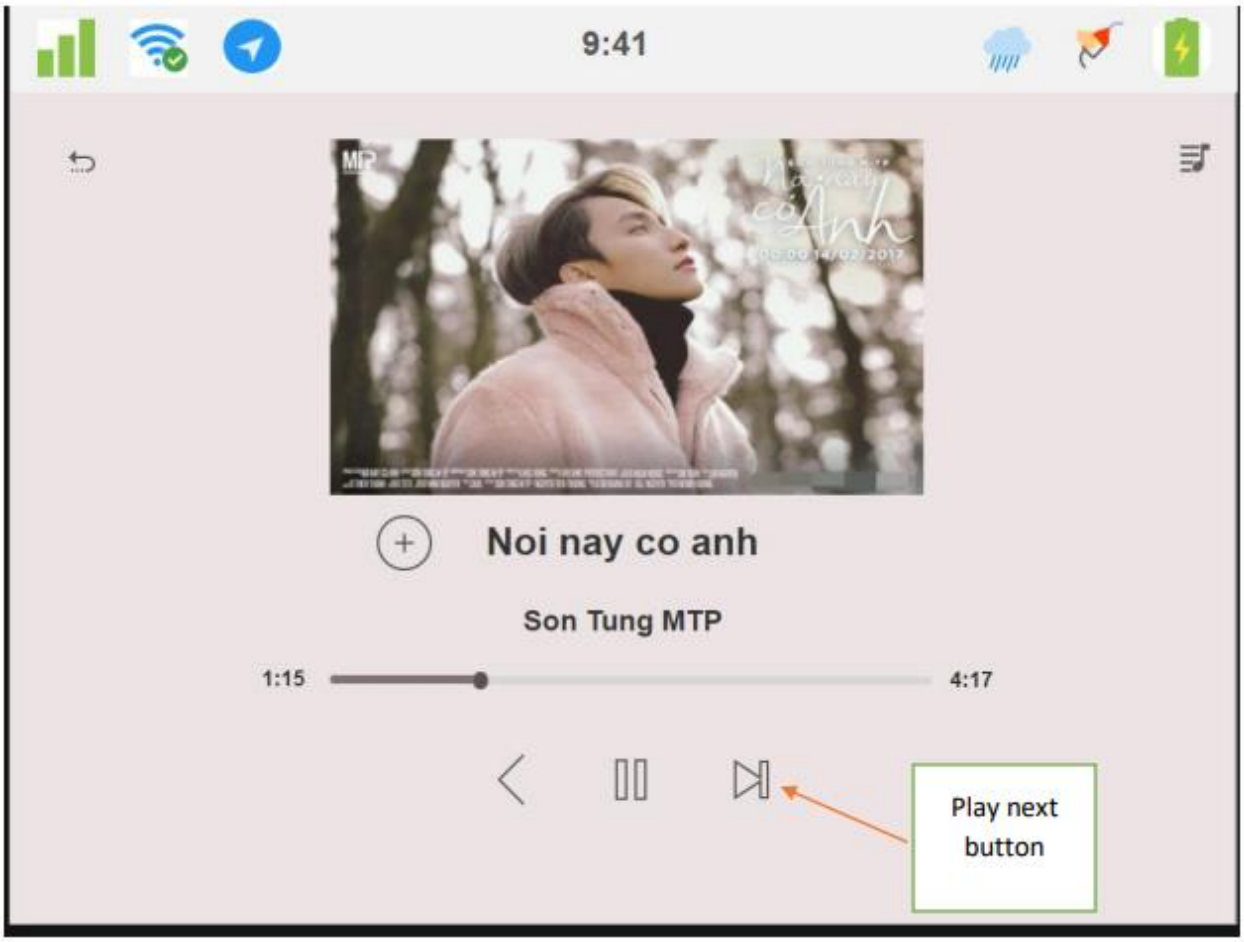



9:41
Playlist button
Noi nay co anh
Son Tung MTP
1:15
4:17
Play next button
Play button

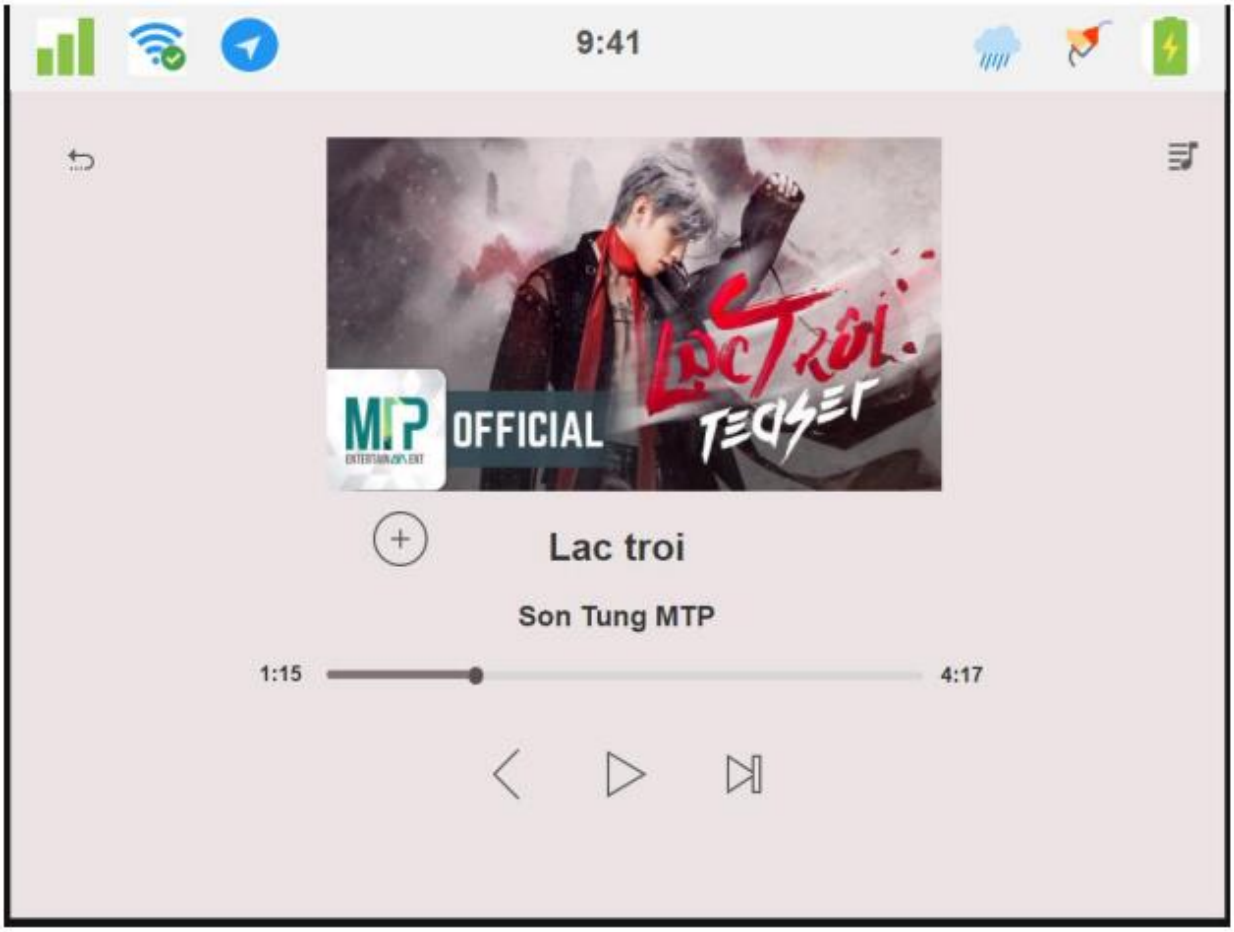
- Music application's basic user interface



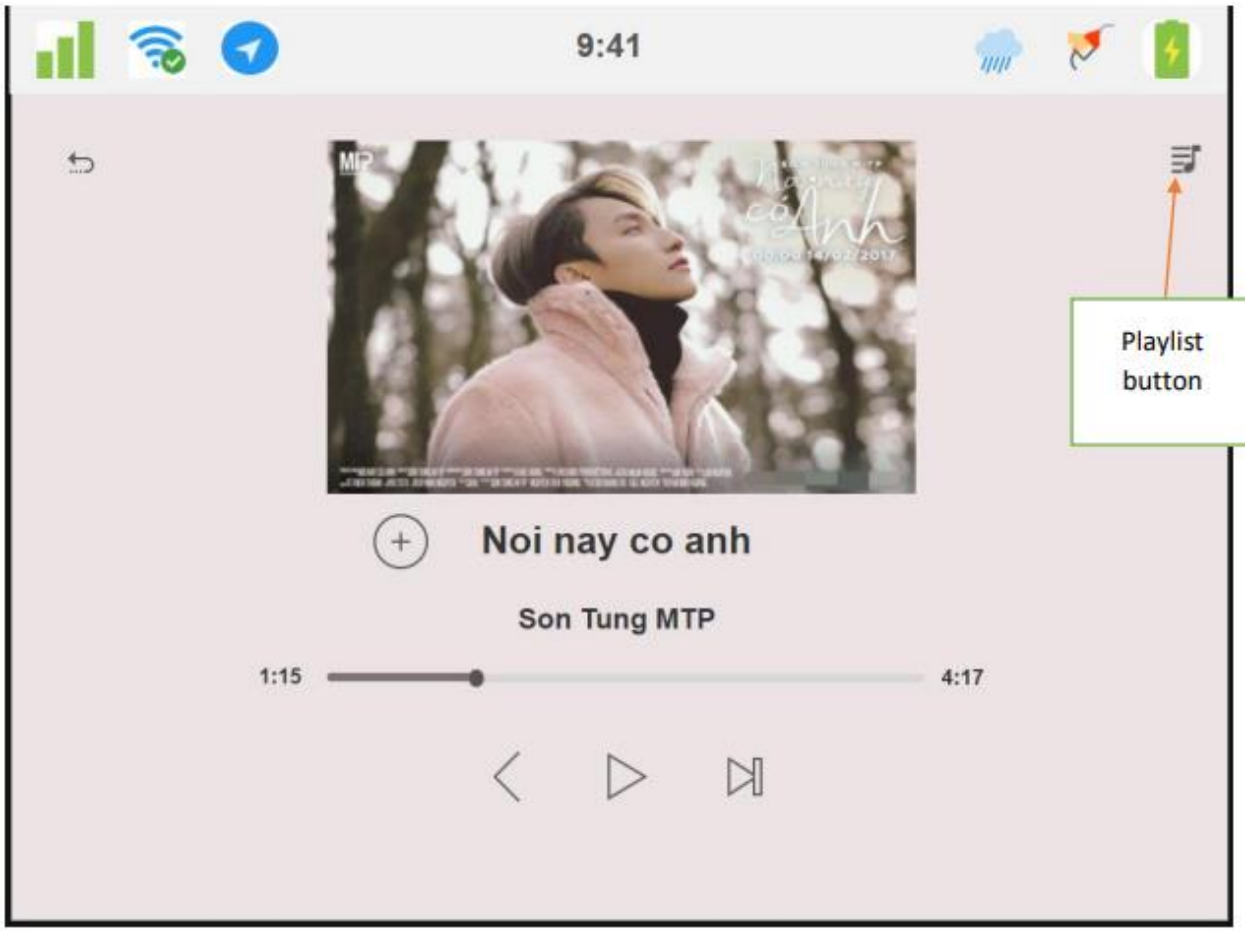
- Users can choose to play or stop music by selecting the play or stop icon.



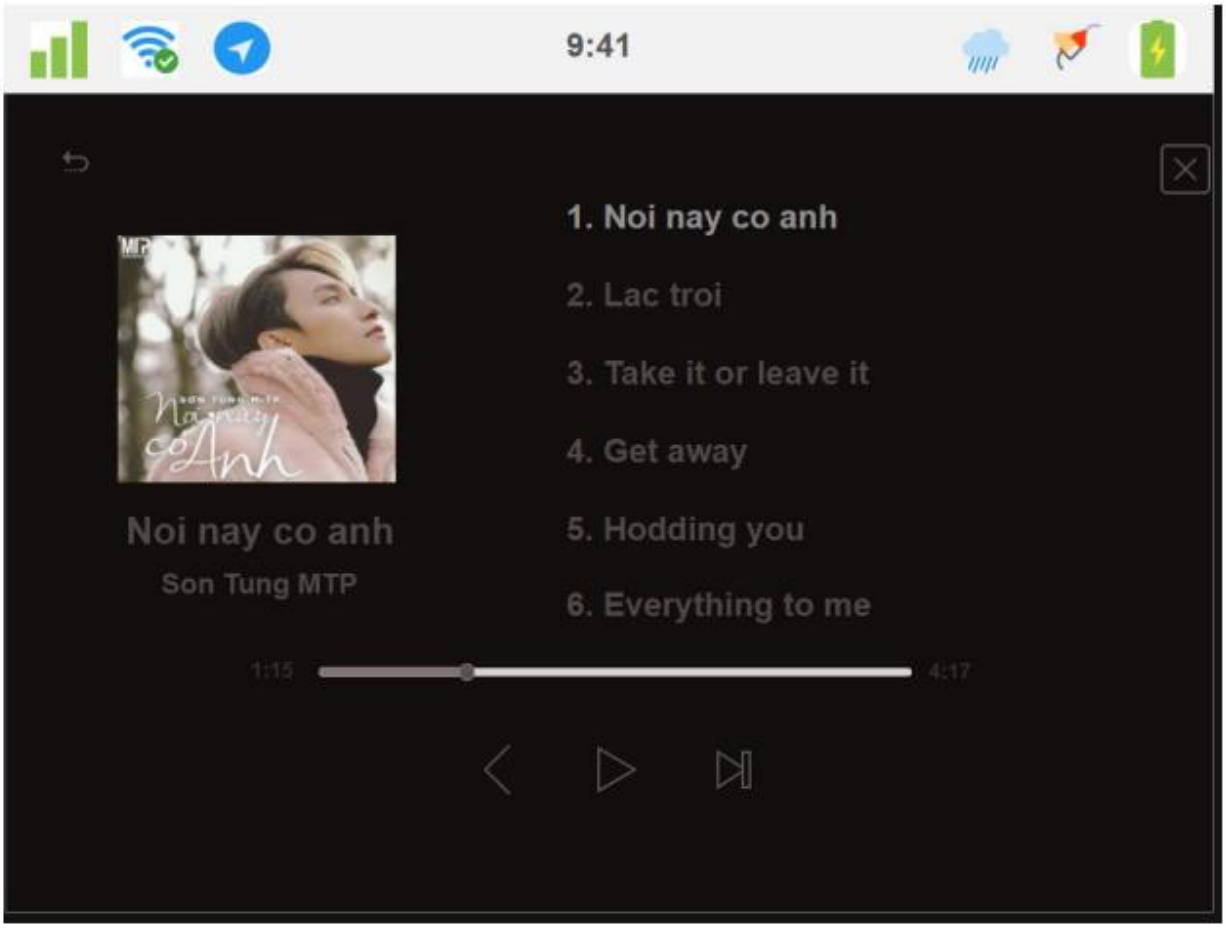
- If the current song isn't to the user's liking, the user can press the play next button to go on to the next song.



- The music has moved up to the next spot in the playlist.



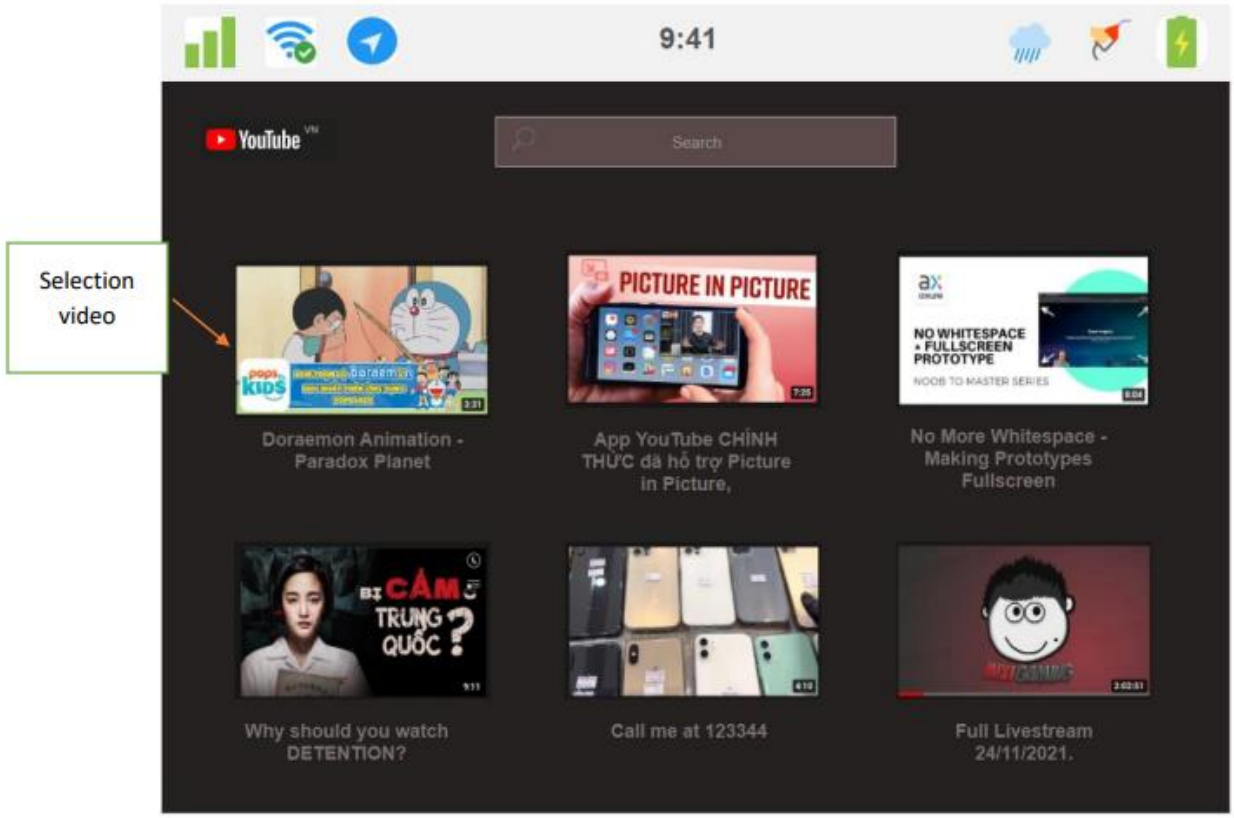
- Users can see all of their favorite music in the playlist option.



- Playlist interface.

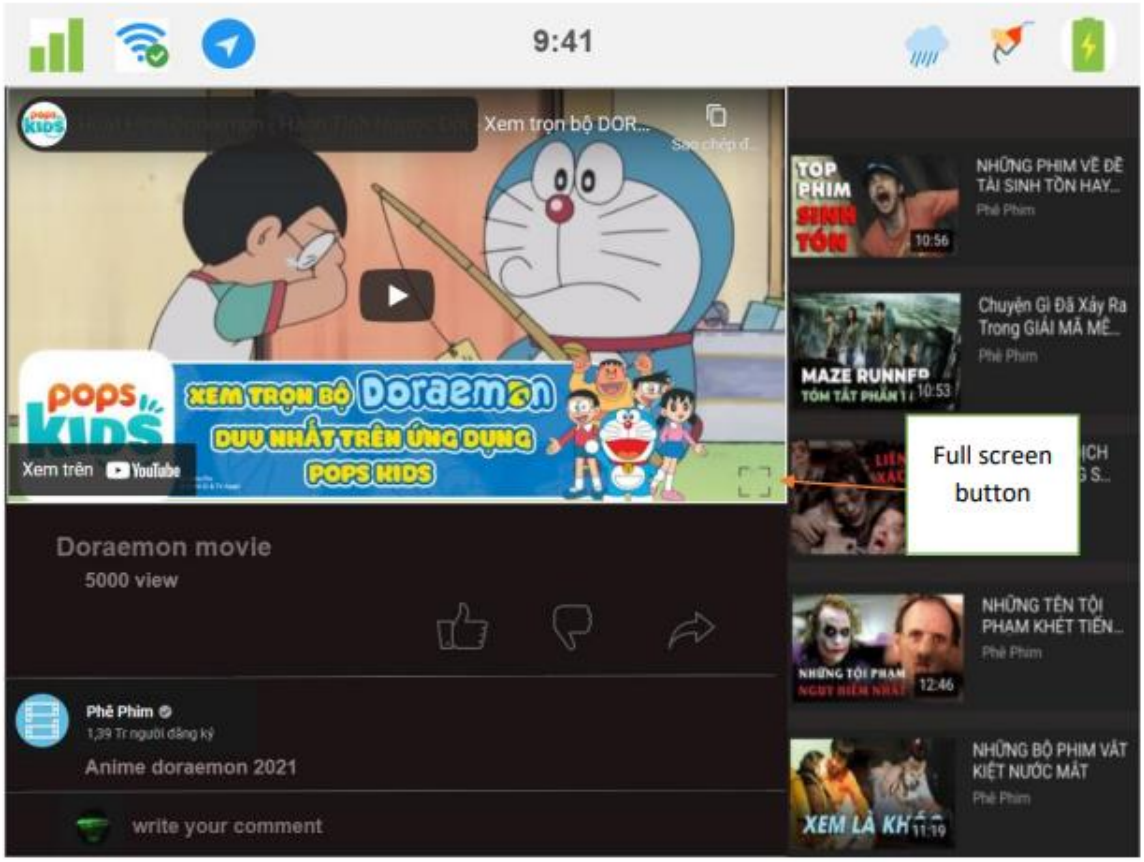
- Users may rapidly search for and select music they enjoy.

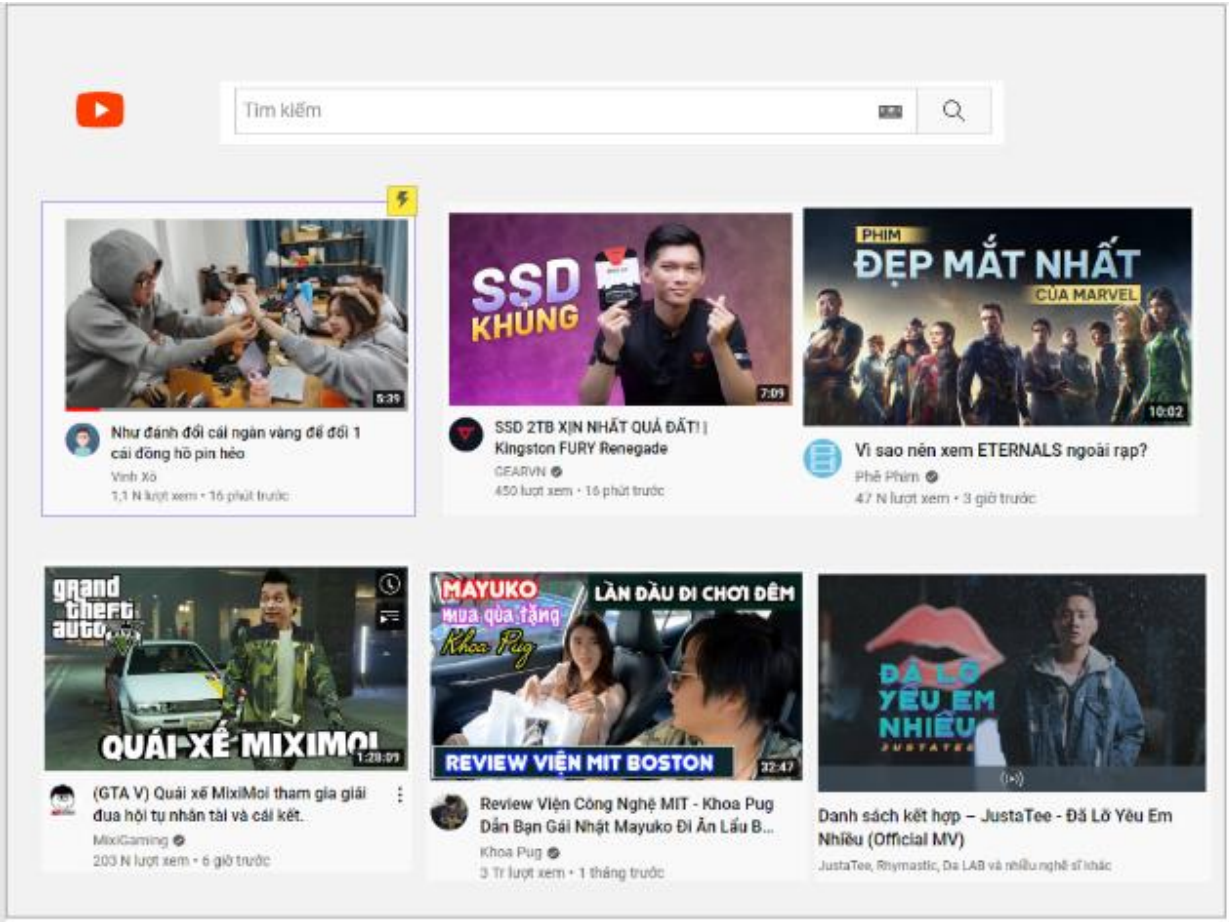
3.2.4 Youtube :



- YouTube's basic user interface.

- Users can watch YouTube-recommended videos.





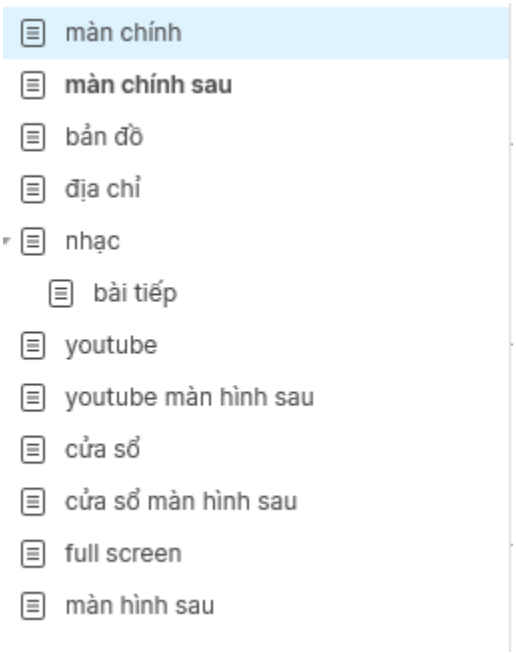
- The default viewing mode.

By clicking on the full screen icon, users can go full screen.

- In full screen mode, the user will have a greater experience than in windowed mode.

4.Mid-fidelitys prototypees:

1.Home



This will be the place where you can choose the utility functions on your entertainment screen

2 Icon

I've used icons and some icons with text to explain what each function can do to the user. All of the icons in the app that I've used are one-way and recognized.

This will search bar for your favorites

This is the button that will take you back to the main screen.

 The button to select the song list is located here.

3. Color

To determine the proper color for all of the page's elements, I used color theory (Design, Color Theory, 2019). The design's colors are all pleasing to the eye. The user interface is kept simple and minimalist. As I utilize it in my app, the black is enhanced by the hues.

This is the fidelity of the universal remote as you can see on the remote, the touch screen can also sync with all smart devices like Alexa, Google Home, Hue Philips.. The remote control that comes with the app can let the user select their favorite channel or app, the remote can control the car's functions wherever the user is, like the living room or bedroom.

- Users can also use voice via Alexa and can command to turn on car functions or turn on music but it can only connect to one device like your navigation device with 2 devices is Alexa and Google Home, users can only choose one of the two devices using voice commands.

5 Consult users

After completing the design and perfecting the universal remote control,we are looking forward to receiving user's comments so that we can further improve the design of the universal remote control and the following related questions

1.How do you feel about the small font and icons?

-All of the characters and symbols on the car screen's buttons are pretty large and clear, so I can see them without difficulty; nevertheless, the operation buttons and the machine are relatively little, especially for individuals with small fingers.

It's a little challenging for someone as huge as myself.

2.Does the touch screen on the remote lag when you use it?

-There is nearly no lag when I use the touch screen on the remote; the operations and buttons on the device have some lag, but it doesn't bother me.

3.should we upgrade voice commands?

-Of couse i want to upgrade voice commands because when using youtube and Alexa i always use voice commands,but sometimes when i speak alexa and youtube always record results that don't match what i say which most of the time i usually get.This error occurs more with Youtube than with Alexa

4. What do you want to get out of your smart key?

-The screen functions are very handy and time-saving, but the voice feature need a lot of work since when watching Youtube, the navigation device frequently produces incorrect results with what I say youtube. I'll improve the quality of the remote and continue to do so in response to customer input.

5. Are you satisfied with our video and movie content communication system for the operator in the back seat of our vehicle?

- Good

- Normal

- Not good

6. Do you believe our video and movie content communication system for the driver in the back seat of our car is complete?

- Despite my belief that the system is excellent, it is not without drawbacks. The entertainment system incorporates the gifted relay plug-in. On the entertainment system, there will be more video options, such as an optional splitter, speed video, and so on.

7. Which of the following production/features would you like to see in your next car, and why?

Bluetooth is a wireless technology that allows you (e.g. free call call).

Sound art and sound management are two different things. (Active noise cancellation, stereo, audio, signal processing, and so forth are examples.)

Detection of blind spots (notifies the driver when entering the blind zone of large cars).

AEB stands for "advanced emergency brakes" (e.g. the vehicle automatically runs and hits the spot and the driver takes no action).

Adaptive program control for love (e.g. the car is able to maintain a safe distance between the car in front on the highway by automatically adjusting its speed)

8. Please mention your top five favorite driving-related applications.

a collection of books (e.g. can be read electronically or spoken books).

There are videos available (e.g. watch online videos or videos stored on smartphones, etc.)

(POI) Location/Location Adaptation (e.g. business locations and reviews, free Wi-Fi location lookups, etc.)

Assistance to the driver (i.e. eco-driving advice, cheapest windshields, traffic cameras, etc.)

Traveling (e.g. trip booking assistance, locator travel, etc.)

Health & Fitness (e.g. step calculator info, info nutrition, etc.)

6 Summarize the above comments and my conclusions

As I stated at the beginning of my course, I have in fact accomplished all the goals and objectives set out. The availability of resource information about smart objects was one of the main problems I encountered during my research. Therefore, I have to rely on data from various sources.

Possible

This smart device is designed exclusively for automobile navigation and entertainment; but, if it can sync with other smart car devices, users will be able to perform numerous jobs with just one device. be liberated After a length of time has been reviewed, the system feeds video and content to everyone in the car, which can recommend or provide feedback on movement behavior. It's possible that the option to construct charts will be added in the future.

I've arrived to the following conclusion based on the results of this poll:

- Although everyone praises my system, it does have certain problems, such as small icon sizes and extensive movie options in the Youtube app. Users will increasingly demand new applications in the future.

- As a result, I must continue to improve my system and conduct surveys in order to collect more data in order to construct a better system in the future.

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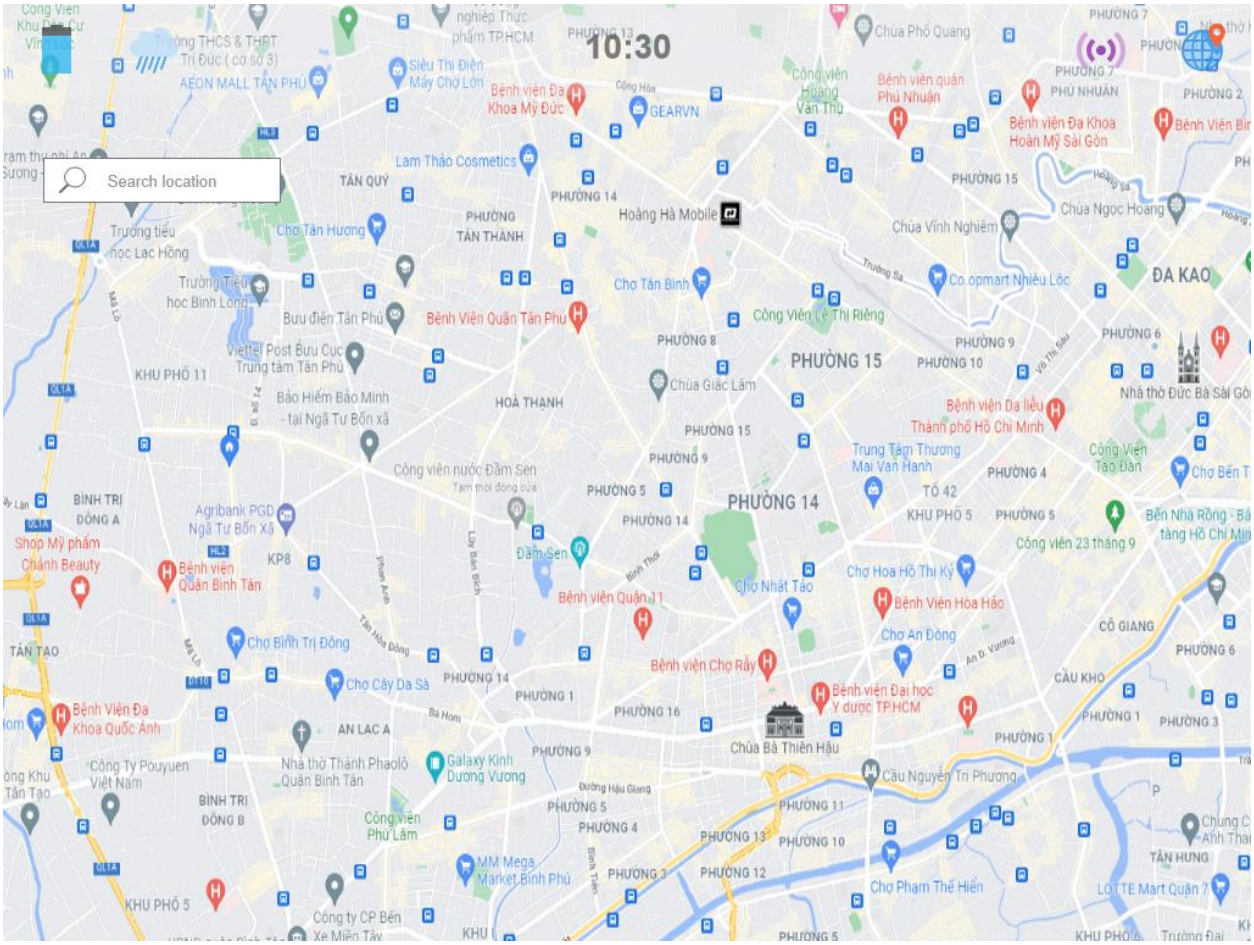
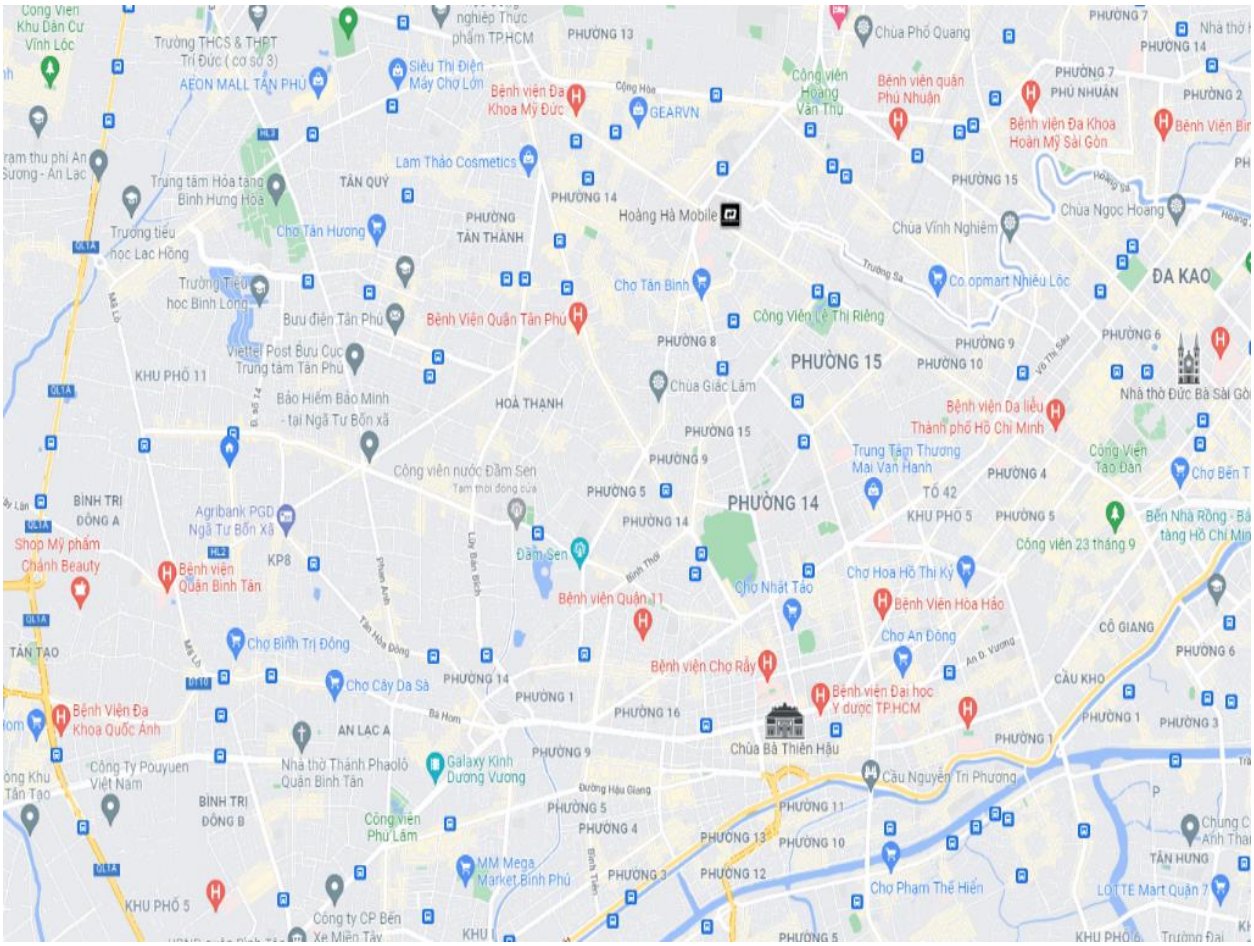
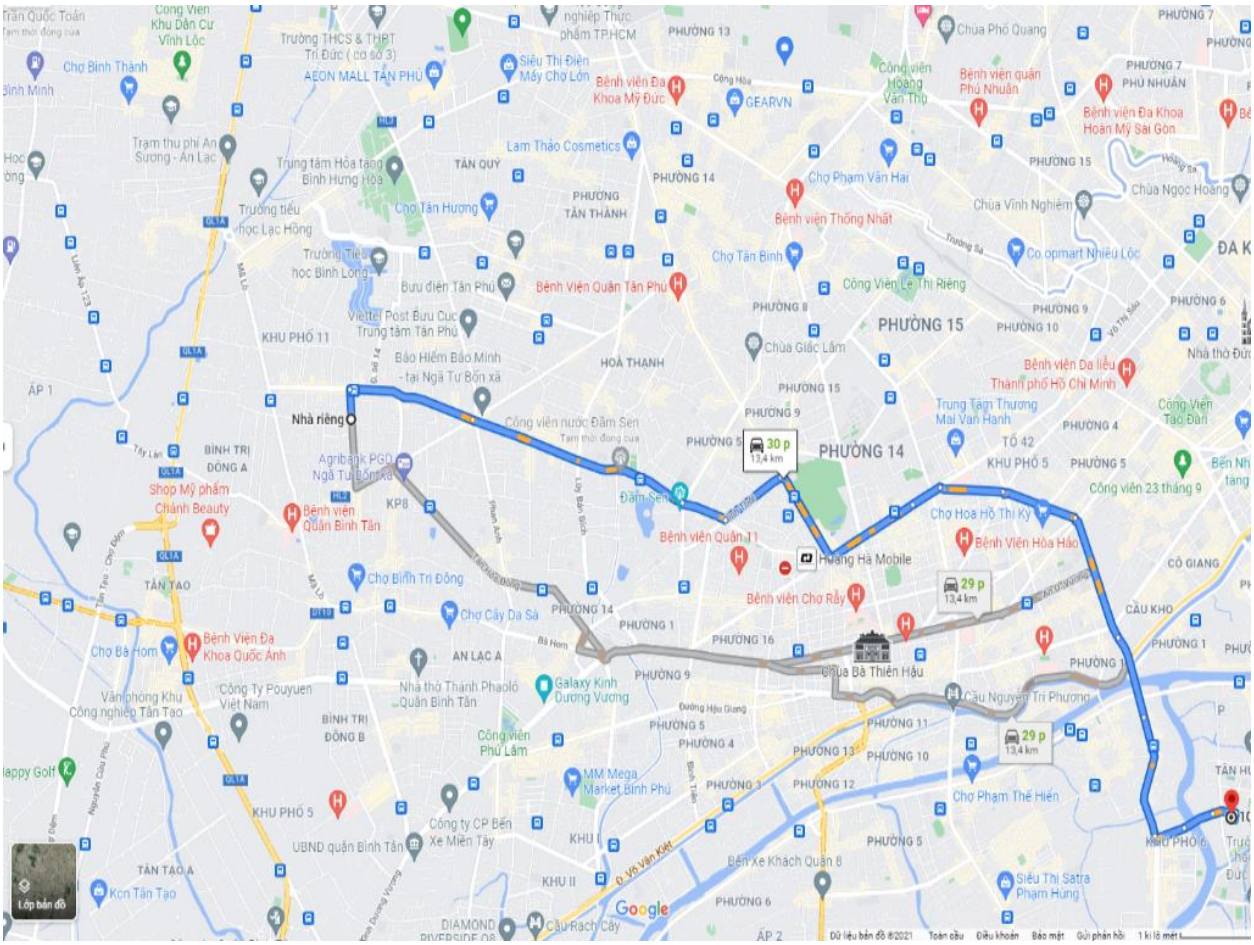
Appendix A

1.Map



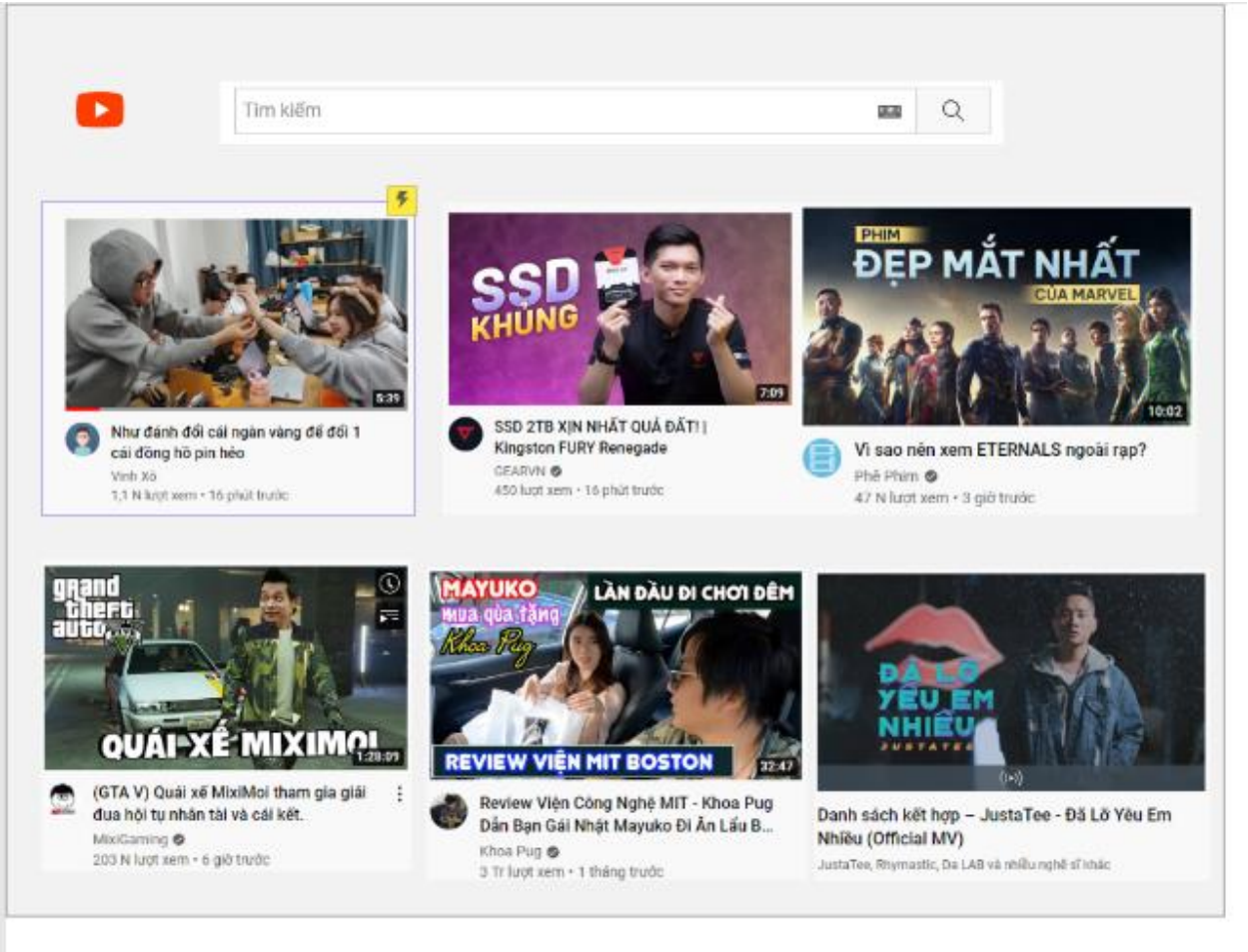
After calculating the beginning and destination coordinates, the application will automatically seek out the quickest path to the destination.





When users enable trip mode, they will be able to see when they are approaching a popular local site.

2.Music



axure design by me

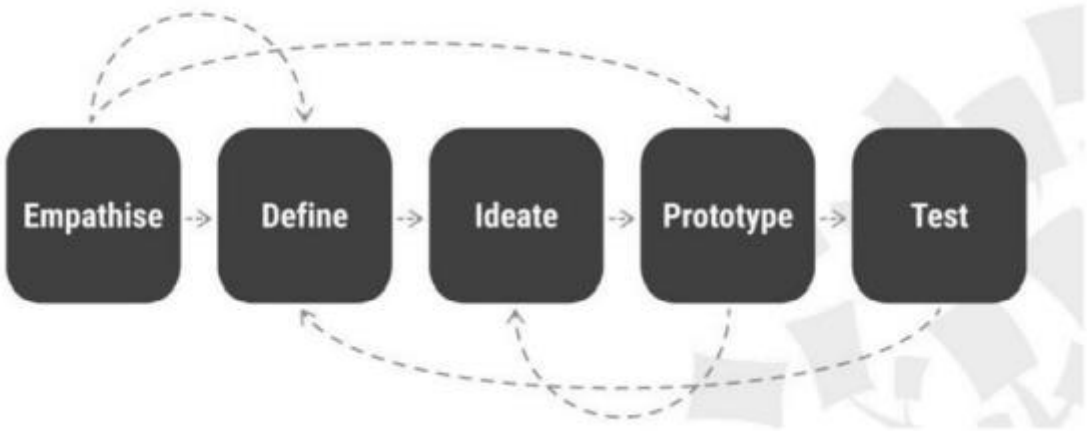
To make the prototype, I'm using axure, a design program. My prototype can be found here:

bài-hiếu.rp

Appendix B

Design Thinking is an approach to problem-solving that

A designer's approach to solving a business challenge utilizing numerous strategies is known as design thinking (Vianna, 2013). Design thinking is primarily concerned with raising product quality in order to improve product service.



During the early stages of the project, the project team tries to understand the context of the problem from the perspectives of both end users and stakeholders. The domain project team collects data and uses it to make decisions once the problem has been identified.

To tackle a problem, different ideas can be produced. They employ various technologies to construct simulations of the solution after selecting the best concept from the analytical data. Prototyping is the final stage of design thinking, and it confirms the idea with the simulation offered.

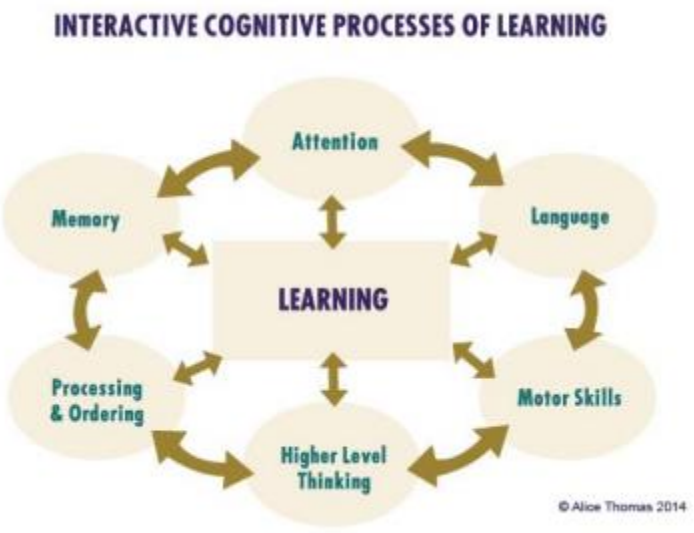
Appendix C

Cognitive process: Learning

In the context of this smart device, learning is a referential cognitive process that will help our consumers grasp how the system works. That function is expected to work. In smart devices, user attention might result in changing text colors, symbols, and notifications. Because our brain can focus on multiple things at once, I keep the essential functionality of both the gadget and the app simple and straightforward.

The app features a page dedicated to setting up and configuring the device. This page includes a visual walkthrough to assist new users in connecting their device to the app. The user will be informed of the gadget's action via immediate response from the device.

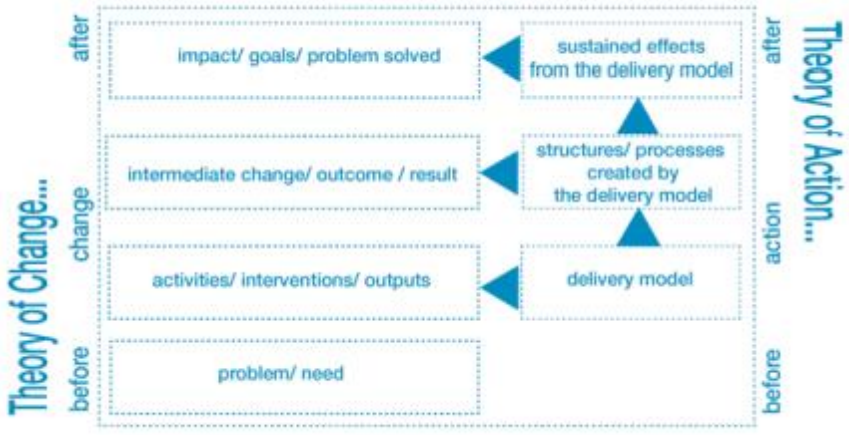
The application's massage information, icons, and button colors also assist users in learning about the software. Other cognitive processes will also aid consumers in comprehending the system's function.



Appendix D

Action theory

Theory of action is concerned with how systems are designed and set up. The importance of understanding the theory of action is to deliver a better product. This theory of action is divided into two parts.



The Execution Gulf

In this context, a user's idea about how the system could work is referred to as the gulf of execution. Focus would create the system in the manner in which users believe it should function.

The design should minimize the gap between how the system is thought to work and how it really works.

Gulf of Assessment

The Gulf of Evaluation is a design that is followed by a user's reaction to the system. This design method also results in a more useful product.