CS-570 INTRODUCTION TO HUMAN-COMPUTER INTERACTION
Fall 2021

PROJECT 2: NOVEL INTERFACES

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BuckTube

PROJECT 2: NOVEL INTERFACES

INTRODUCTION

In this project, our goal is to improve a stream media platform. And our setting is focused on the using experience of the stream media platform in a friend's movie night. In the past two years of COVID-19 pandemic, the stream media platforms have become a significant part of movie industry and an ideal alternative when movie theatres are not available. Over the past year, me and my friends has held weekly movie nights at our homes and these stream media platforms have brought us convenience and saved us a huge amount of money (when comparing to all of us go to movie theatres). However, as everything getting back on track, the stream media platforms are now facing challenges from various aspects. Aiming to help stream media platforms survive the challenges, our project is based on the problems and challenges we identified:

1. The challenge of return of the movie theatres brings a strong competitor back into movie industry.
2. Several inconvenient designs existing in the current stream media platforms which might cost customers huge amount of time and money.
3. Lack of feasible and suitable way to adapt into current trending topics such as metaverse and AR/VR, crypto, NFTs etc.
4. Limited too much in video (movies and series) and could not improve the watching environments of users because of lack of interaction beyond videos themselves

Also, during the data gathering phase, the actions of participants are mainly based on mobile devices and desktops. This definitely influences the accuracy we evaluate the embodied solutions we want to take. To minimize this side effect, we took two main strategies in the whole design process:

1. All the problems we identified should be addressed in this project. So except from the solutions associated with embodied technologies in the video prototype, certain improvements are done on the mobile devices and desktop interface part of our platform.

INTRODUCTION

2. As we are making a multi media, embodied interacting project, the screen based interactions (though they are not the main focus) are still existing in our project. What's more, we desire a smooth transition between the embodied interactions and screen based ones to be presented in this project.

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UNDERSTANDING

Fieldnotes & Interviews

We choose friends of one of our group members as the participants of our observations. The setting of the observation is in the key actor's living room. There is a sofa, a side table in front of the sofa, a TV in the front of the room, and some blankets on the sofa. Since they are at their own house, and the relationship between the participants and the observer is close, participants will be in a natural relaxed mode when they are under observation. By doing these, we could ensure the natural setting and descriptive principles of Ethnography.

Here is the setting of the movie night:

When we are observing, we sit at the corner and be as quiet as possible to let people ignore us, so that they can act normally. We used two methods: Fly-on-the-wall observations, and interview observations. After the observation, we gained the field note:

I feels hungry
Should we order some food? What do you guys want to eat?
Buffalo? Oh it's closed
Maybe Papa Johns. I can order that.
Nah, my account have doordash pass, I can order that and save some money

We interviewed the participants after observation:

Interviewer	I noticed that you walked away to take a phone call at the end of the first half of second movie, will that make a difference to your experience
participant1	Yeah, my dad only calls 1 time every 2 week so that's not usually happen.
participant1	You will definitely left up some scenes after a phone call
participant1	when you only left for a bit of time, I think it's definitely fine to ask your friends
participant1	But when you left for quite a long time, there would definitely be nicer to have an alternative method to catch up
participant1	What I usually do is rewatch the part I missed alone after we finished the movie together

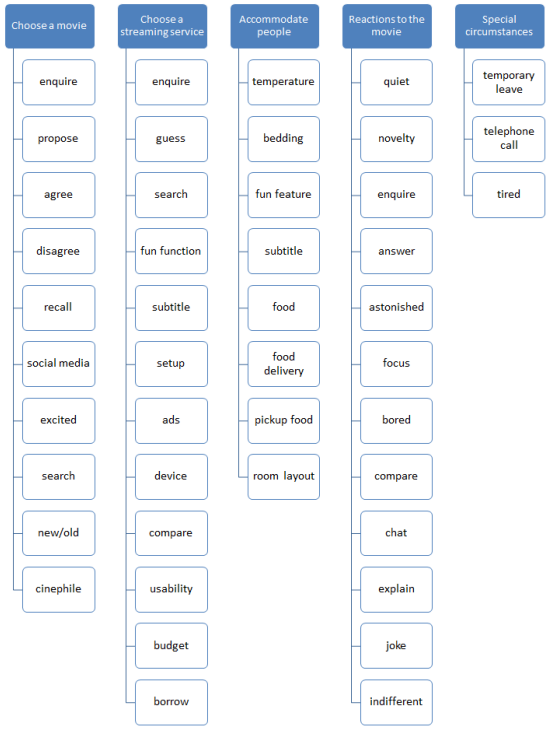
Interviewer	Eh, I noticed that you guys orderd a pizza yesterday, do you guys always do that?
Participant3	yeah definatily! We order some food time every single time
Interviewer	What do you think of the food dilliveray service?
Participant3	To be honest, the dillivery fee usually becomes a bit pricy and the time usually takes a bit longer when it comes to night other than that everything feels ok
Interviewer	Do you have any suggestions to improve that
Participant3	Actually I do, you know, there was video platforms teaming up with dilivery apps to offer VIP bundles in China and that would be saving up a huge amount of money
Interviewer	I also would like to know what kinds of food you guys you guys usually order?
Participant3	Usually fast food, cheese burgers, chicken wings, piazza and things like that
Interviewer	Why would it be?
Participant3	I mean, you don't have to wait an insanly huge amount of time ordering this
Participant3	Also, you actually have that much of option, only fast foods open up till that late

Models

After the data had been collected, we started the data analysis process. We chose a Grounded theory analysis method to abstract the field notes.

Step 1. Grounded theory & Affinity diagram

We get the affinity diagram using open coding, axial coding, and selective coding.



Affinity diagram

Step 2. Grounded theory analysis

We get a theoretical model based on comparative analysis and theory building.

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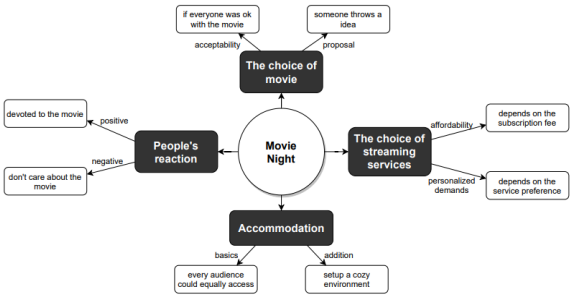
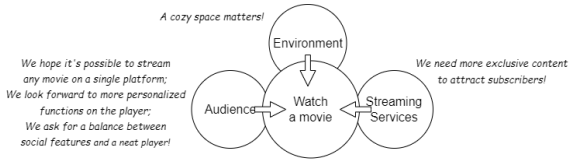
UNDERSTANDING



Step 3. Based on the Affinity Diagram and the theoretical model we have got, we come up with two model:

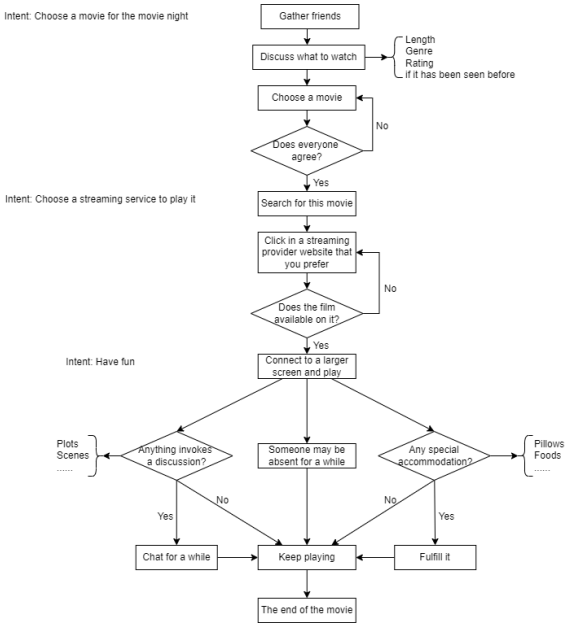
#1 cultural model

a movie night event has multiple influencers



#2 sequence model

a movie night event typically follows a series of steps



Findings

After the analysis and getting the multiple models, we come up with four results and four corresponding early ideas:

Result 1: Some movies are only available at specific streaming platform, and it is hard for people to decide which streaming platform to use for a specific movie

Early Idea 1: show the information of that movie, redirecting to the platform that has the copyright of the movie

Result 2: people usually would like to have something to eat and drink during watching the movie

Early Idea 2: Cooperation between the streaming platform and a food delivery merchant, and provide some coupons to the user

Result 3: When people are watching the movie together, one person sometimes leaves for minutes, and it would be hard for them to catch up with the plot when they are back.

Early Idea 3: a small screen for people to catch up with the plot they missed to enhance the user experience for the upcoming movie.

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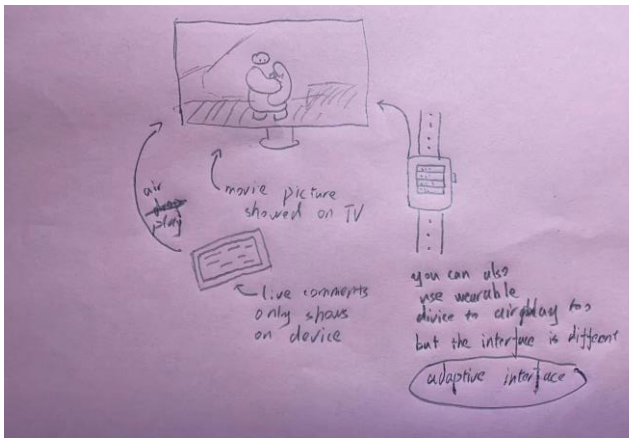
IDEATION

Firstly, During the observation of design ethnography phase of our project, we identified several behaviors of the participants which could possibly contain design opportunities:

1) As a fairly new concept, bullet screen comments is highly used in Chinese stream media platforms such as Bilibili. They have become a quite useful method users interact with other users without pulsing the video and get to the comment section. However, during the observation we found that the comment will overlap the movie picture and thus reduced the movie watching experience. However, because of the interactive nature, we do not want to totally remove this feature. So we added a separate screen method to resolve this issue.

   Here is a scenario which the user wants to interact with other people via live bullet screen comments but there are too much comments from other user:

And here is our sketch of this design idea:



2) Users might leave the setting due to their own business such as picking up phone call etc. And they will miss part of the movie plots and confused by the following plot when they come back for their business.

   The design idea we came up with here is adding a text based plot catch up function on the device they use (tablet, phone, wearable

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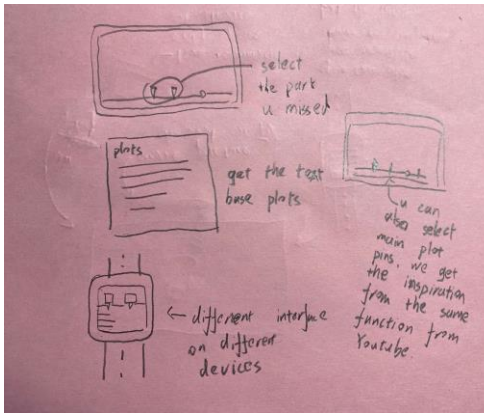
devices, etc.) As for the device choice, we excluded alexa and hompod mini here since the sound interaction they require might affect other users' experience who located in the same setting and watching the same movie together. Also, we took the same separate screen design from last idea to minimize the influence to other users.

Here is a scenario from our field note which one of the participants fell asleep and left the setting and go get the delivered food:

71	Participant 3		fell asleep
72	Participant1&2		Watches for another 1
73			The movie charcter go
74	Participant 1	Can he actually escape again	
75	Participant 2	I don't think so	shakes her head
76			The movies character
77	Participant1	Ha ha! I told you so	
78	Participant3		Woke up by the food
79	Participant3	I'll go take the piazza	
80	Participant1	Sure, you can take my keys	
81	Participant3		Leaves room
82			Movie ends
83	Participant3		gets back with pizza
84	Participant3	Can you guys tell me what happens near the ending of the movie? I fell asleep	Opens the pizza box a

And here is the sketch we did for this idea:



3) During the observation, we noticed that the users usually want have some food to eat when they are watching a movie. However, as the event often take place at night, the food delivery expense becomes relatively high and the delivery service usually takes a huge amount of time. So the idea we have here to solve the problem is using starship robots to achieve a faster and lower cost delivery.
Also, we noticed that when there are two our more participants, they usually take a relatively long period of time on the selection of food types.
After the brainstorm phase of our project, we decide to apply a food recommendation algorithm base on the food preference and delivery service data of other users watching the same or same genre of movie.
As the idea is need based and is mainly robotic interaction. It is too complicated to be included in

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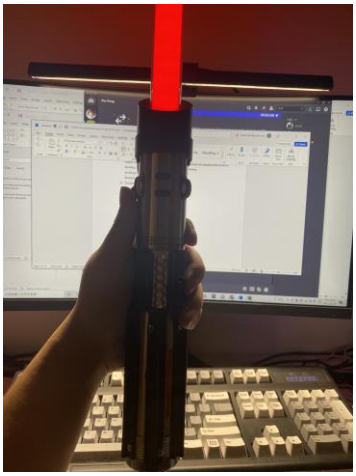
simple scenario pictures and sketches. Please refer to the prototype section for more detailed solution for this part.

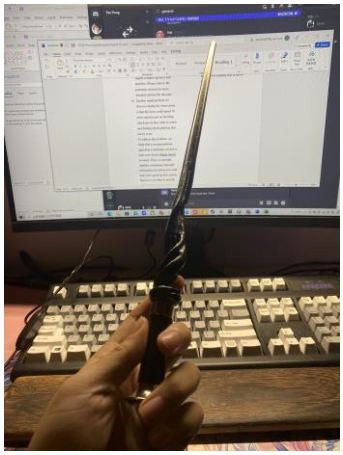
4) Another small problem we discover during the observation is that the users could spend 10 more minutes just on deciding which movie they what to watch and finding which platform that movie is on.

   To address this problem, we think that a recommendation algorithm is definitely needed to help users decide which movie to watch. Then, a copyright database containing copyright information for all movies could help users speed up their search. Moreover, we what to provide subscription account renting service to help users save money.

Then our design ethnography enters the interviewing phase. We also got valuable information and insights from the interviews.

1) The first problem we discovered in this phase is that some of the participants found watching movie at home less engaging than at movie theatres.





As movie fans, our group members buy a lot of movie merchandises such as light sabers and wands. Then we got inspiration from these and have the idea “what if the merchandises could interact with the movie plots” Also, we identify that to achieve the goal of bring audience into the movies, simulation method such as heat, light, interactive vibration are needed.

Meanwhile, we want them have the functionality to control the interface like a controller, just like the following sketch:

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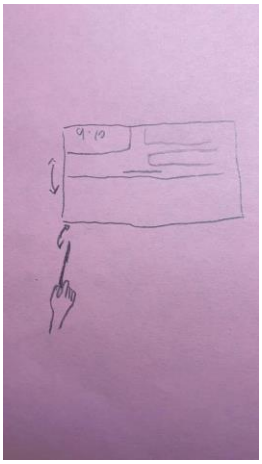
PROTOTYPING



2) Certainly, there are ideas we did not apply. For example, letting users use cryptos such as Bitcoins to pay for the subscription.
But these ideas did not actually add to the user experience, so we decided to give them up.

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PROTOTYPING

We produced a 3-minute-long video to deliver our design ideas for BuckTube. In this section, the entire production process will be elaborated from pre-production, production to post-production.

Pre-production

1. Personas

   Throughout the above analysis of user data, interviews and other materials, we identified our potential users had the following goals for using streaming video services (which are also our design ideas):

   a) watch high quality videos
   b) separate bullet-screen comments from the primary screen
   c) interactive simulation equipments
   d) easy access to every movie regardless of copyright issue
   e) food recommendation and fast delivery service
   f) plot catch-up function when you miss some scenes

   Thus, we created three archetypal characters (personas) as below.

   Persona 1:

   Alex (not real name), 26 years old, is an absolute geek who holds an engineering degree. He has a well-paid job and plenty of free time. Alex is eager to try new things, even if it costs him a lot of money. He hopes that the streaming media platforms could provide an experience that is even better than what a physical cinema can offer!

Persona 2:

Cindy (not real name), 20 years old, is a college student and heavy social media user. She loves to update her daily routines on Snapchat. She wants to keep in touch with her friends all the time. Plus, she has an exuberant desire to express her opinions on a film.

Persona 3:

Justin (not real name), 22 years old, is a cinephile. He has watched hundreds of films so he is very demanding about the quality of movies and streaming services. He insists on watching movies with at least 2K resolution.

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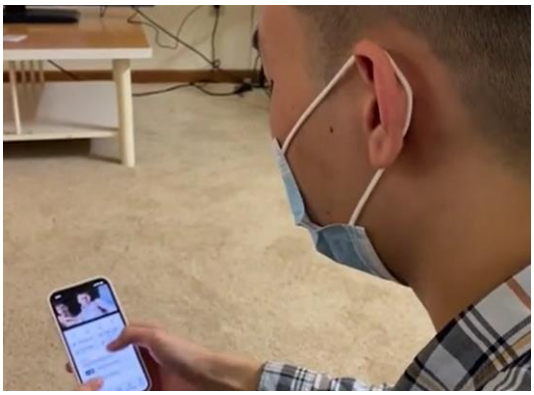
PROTOTYPING

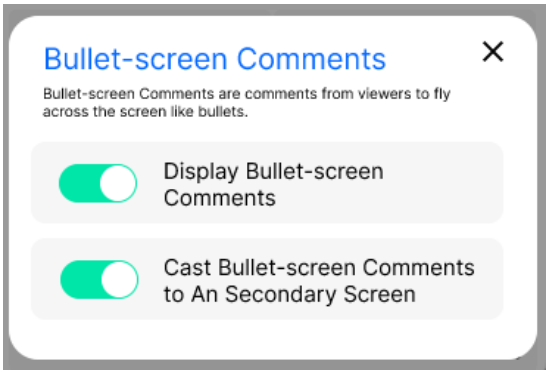


2. Vignettes and Storyboards

   Since this video aims to illustrate the new functions for embodied interaction of a streaming media platform, we built an imaginary streaming media platform named “BuckTube” on Figma. Based on the personas that we had created, we wrote several scenarios to display each proposed design idea. Then we drew storyboards for them.

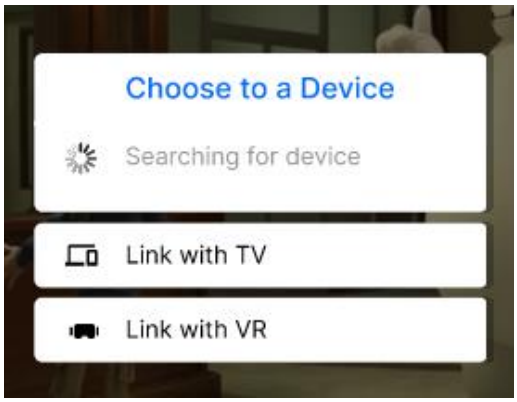
   Scenario 1:

   Cindy loves to see bullet-screen comments while watching the movie. However, Justin doesn’t think so and feels kind of annoyed because those flying comments block key scenes. Luckily, thanks to BuckTube’s splitting bullet-screen comments function, the screen of the television could only play the movie while all bullet-screen comments would scroll on the screen of the mobile phone. Thus, everyone’s need has been satisfied. Justin and Cindy don’t have to quarrel with each other!



Scenario 2:

BuckTube is a cross-platform service, so Alex can not only watch movies on the TV, but also immerse himself in the world created by the movie on his Oculus VR. When Alex is watching a Star Wars movie, he can wave a lightsaber in a battle, use his voice to control a BB-8, even drive a Millennium Falcon across the universe.



Scenario 3:

Justin wants to watch a movie named Uncharted, but it is not available on BuckTube due to copyright issues. Having said that, BuckTube is able to prompt him to jump into another streaming service that can play this movie. Hooray!

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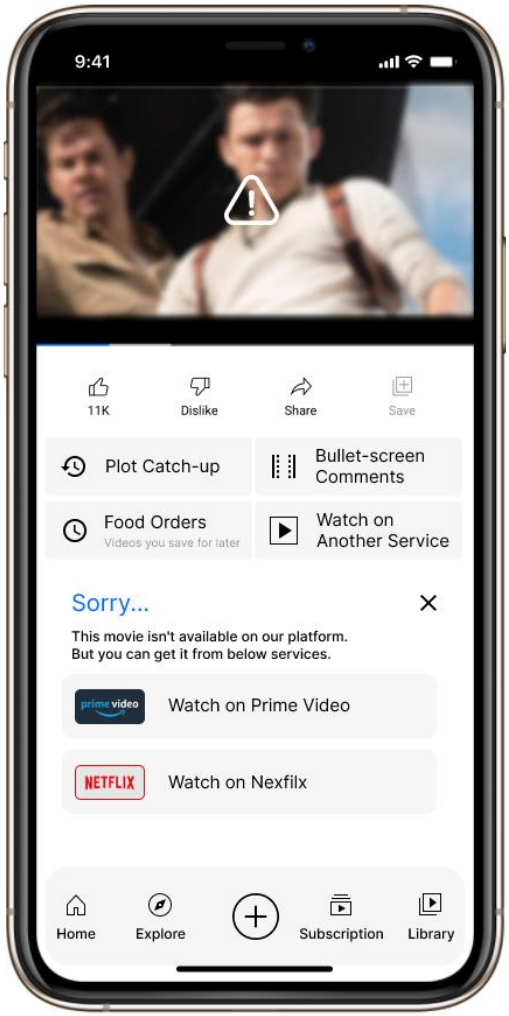
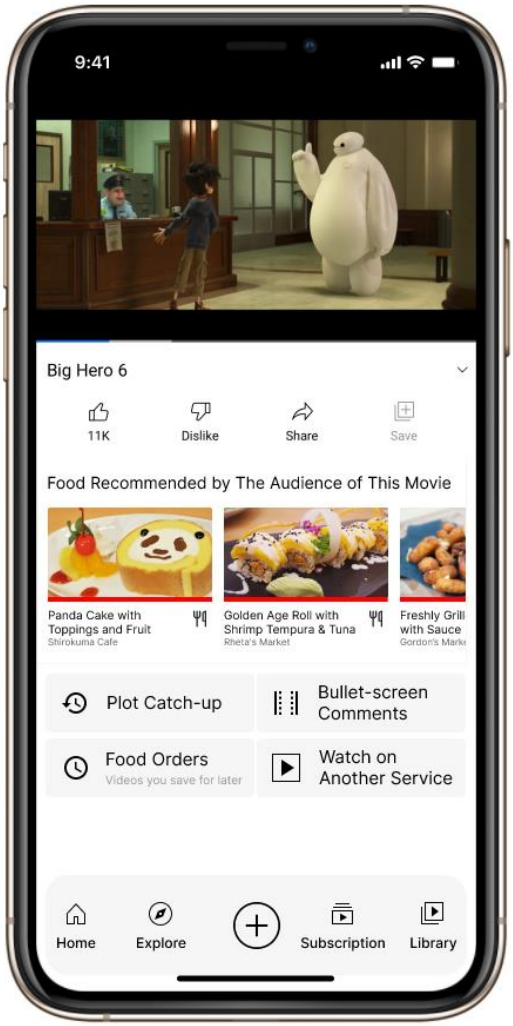
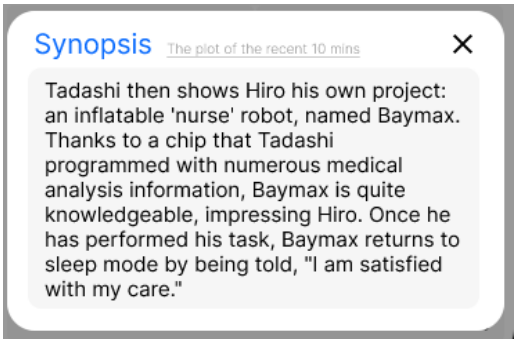
PROTOTYPING







Scenario 4:

In a movie marathon event, people have been watching movies continually for six hours. Everyone is starving. Don't worry, BuckTube can even feed you! Cindy picks some food recommended by people who previously watched this movie. Soon after she finalizes an order, a Starship robot delivers the food to her place. Thanks to the plot-catchup function, Cindy can pick up food unhurriedly without worrying about missing some plot.

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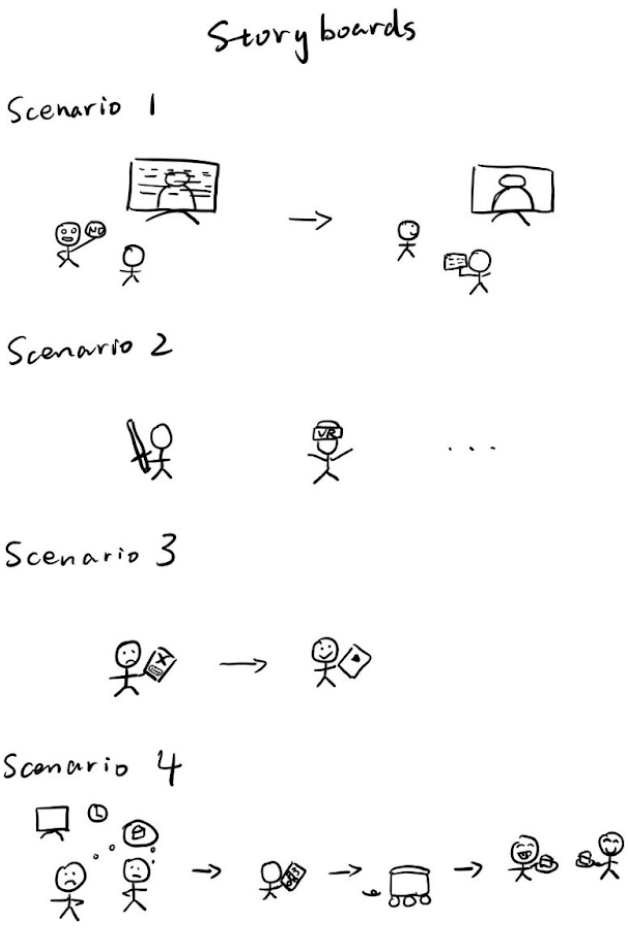
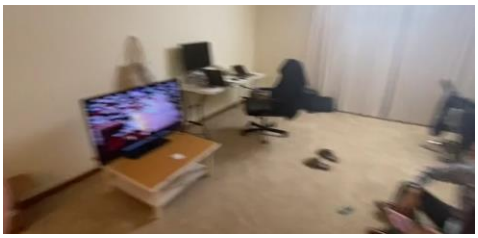
PROTOTYPING



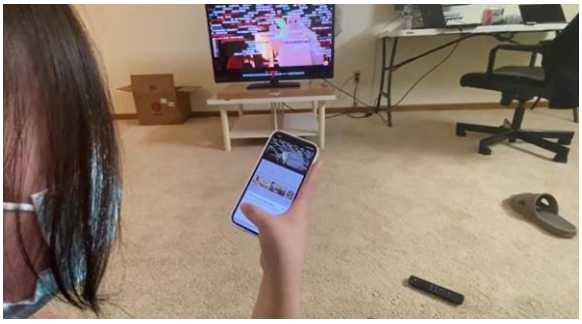
Production & Post-production



After completing all the pre-production work, we shot this video prototype in a living room, according to the vignettes and storyboards we made before. In order to minimize the potential risk of COVID-19, our cast has only three actors. Besides, every crew member was wearing masks all the time on the set.

Scenes - including the screens themselves, people's behavior and the overall environment - were shot separately and merged in the post-production.

Scenario 1:



Scenario 2:

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PROTOTYPING

Scenario 3:

Scenario 4:

We used a wide range of video editing techniques in the post-production stage. We cross-cut the following footage: screen recordings, close-ups of people, and panoramic environments.

This video prototype has been uploaded to Canvas on Dec 10, 2021.

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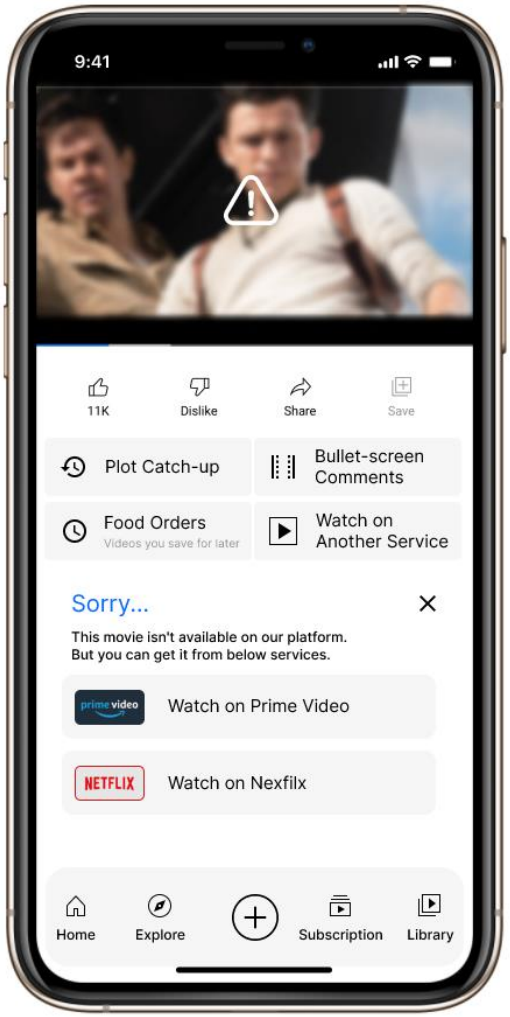
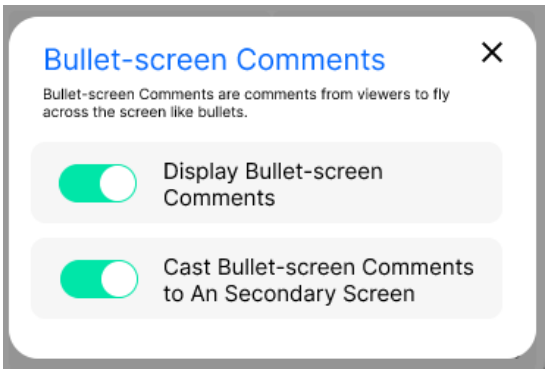
FINAL SOLUTION

Interface #1



Some movies are only launched at specific streaming platforms because of exclusive copyright, so it would be hard for people to decide which streaming platforms they should search for. Therefore, we design this interface that shows the copyright information of that movie, and redirect to the platform that has the copyright of the movie.

Interface #2



The Bullet-screen will block the screen sometimes, so we think we could see those bullet-screen comments on a small screen that will not influence the user experience of those who also want to see those bullet-screen comments. After clicking at the “Cast Bullet-screen Comments to A Secondary Screen”, it will only show on the small screen of the mobile phone.

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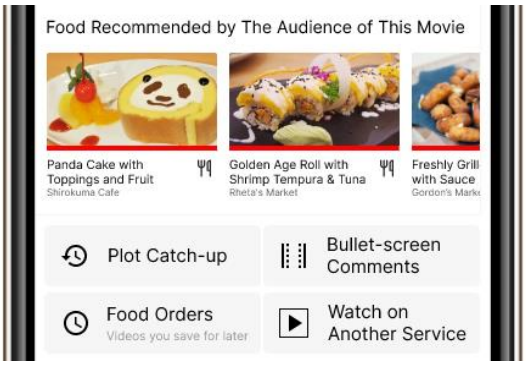
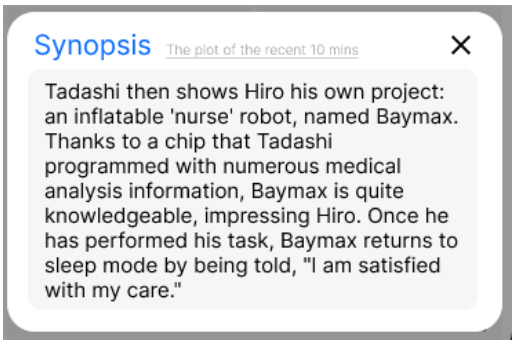
FINAL SOLUTION

Interface #3



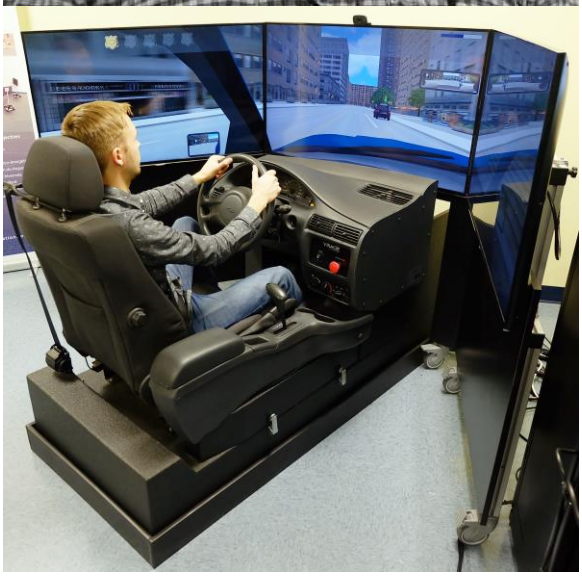
People usually would like to have something to eat and drink while watching a movie. Therefore, we directly provide a food delivery merchant on the platform, and provide some coupons to the user. After simply clicking on the food, it will be delivered to the user's address.

Interface #4



If one person has to leave for minutes, like going to the restroom, since the movie will not be paused, it would be hard for them to catch up with the plot when they are back. Therefore, we design a plot catch up interface, where the plot will be shown on a small screen. That will enhance the user experience for the upcoming movie.

Interface #5



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FINAL SOLUTION

We designed an interface to link the phone to the VR machine, that people could directly use VR glasses to see the movie. Moreover, we included physical simulation on the equipments. For example, the vibration and collision of race car simulator will simulate the feelings of movie scenes. Also, the sound, light and heat will bring you into the world of Star Wars. The reaction between movie and user is achieved by using VR equipments, simulation equipments and motion receptors.