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1. Team members

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2. PACT analysis and use-case scenarios

2.1 SCENARIO OurVideoPlayer/01

Title

'How to perform the elementary functions of video playback?'

Scenario type

Activity scenario

Overview

People = Frank, a single man, an outdoor sports enthusiast, computer literate.

Activities = Performing the elementary functions of video playback, including playing/pausing video, turning to the next video, adjusting the volume, fast forward 5s, fast rewind 5s, multiplier, full screen.

Context = Coffee shop

Technology = Wi-Fi and a PC

Rationale

The substantive activity is performing the elementary functions of a video player. The user can control the video by clicking on the buttons on the software, containing playing/pausing video, turning to the next video, adjusting the volume, fast forward 5s, fast rewind 5s, multiplier, full screen.

P1. Frank is an outdoor enthusiast and responsible for shooting videos of the activities in his outdoor activity group. On this day, he brought his personal computer to the cafe

and wanted to upload the videos to his personal video library. When the preparations were complete, he was ready to start enjoying the videos. He clicked the play and full screen button in the playback interface, causing the video start playing. At this point the order was in readiness, which forced him to press the pause button to stop the video from playing with the aim of reaching coffee.

P2. After checking the quality of this video, he switched to the next one and repeated the work. At this time, he discovered that this video is barely audible, after clicking the sound adjustment button he found that the sound turned out to be too low, so he dragged the sliding button to set the volume to 50. Later, he recognized one of the videos to be blurry and located the problem in filming approach, so he fast forwarded by 5 seconds to check subsequent scenes. Suddenly, some astonishing images attracted his attention, so he rewinds back 5s to admire those images again. After watching several videos, Frank felt exhausted and desired to rest early, thus he set the speed to 1.5 multiplier to quickly check through these videos.

2.2 SCENARIO OurVideoPlayer/02

Title

'How to perform the function of searching, tagging and playing videos in the video list?'

Scenario type

Activity scenario

Overview

People = Mina, a single woman, an outdoor sports enthusiast, computer literate.

Activity = Searching videos in the personal video library, tagging videos and playing the videos into the video list.

Context = Apartment

Technology = Wi-Fi, a PC, and a TV

Rationale

The substantive activity here is searching for videos in the personal video library, tagging videos and playing the videos into the video list. The user enters the name of the video in the input box to search for it. Videos can be labelled with different tags to categorize them. Also, user can click on the video in the list to play it.

P1. Mina is a regular user of this software and has uploaded considerable videos to her personal video library. But the jumble of videos without corresponding tags often makes her very confused. So, she clicked the tag button to tag the videos with different tags. This day she had a dinner with her best friends, who are all outdoor sports enthusiasts.

P2. After the dinner, her friend wanted to watch the video of their previous sports trips together. So, Mina, after entering the video playback interface, searched for the video her friend wanted to watch. After watching a video, her friend was interested in a video which describes they went skiing together in the playlist on the right, so they clicked on the video and watched it together.

2.3 SCENARIO OurVideoPlayer/03

Title

'How to upload, share videos and manage personal accounts?'

Scenario type

Activity scenario

Overview

People = Sam, an outdoor sports enthusiast, computer literate.

Activity = Uploading videos, sharing videos, and managing personal accounts.

Context = Apartment

Technology = Wi-Fi and a PC

Rationale

The substantive activity here is uploading videos, sharing videos, and managing personal accounts. Users can upload videos from local folder, share their videos with friends and manage their accounts by registering and logging in.

P1. Sam is an outdoor sports enthusiast, who holds various sports video records. However, the flash drive that stored these videos was lost by him, although it was found a few days later at home. He had a feeling that storing the videos on the flash drive was not reliable, so he downloaded this application, registered his own account, and set a photo of him swimming as his avatar and the phrase "Sports never stop" as his personal signature. After that, he uploaded the videos from his flash drive one by one. After uploading, he clicked the share button and shared a few videos with his friends.

3. Platform

The target platform of our design is desktop.

4. Cycle

4.1 Cycle1

4.1.1 Prototype

Purpose

The first loop targets the video playback, opening folder, pause, volume adjustment, and video switching. The elementary functions should be the primary consideration as a video playback software. Without the realization of them, even achieving significant improvements afterwards, it is meaningless and makes no sense for the software, which cannot meet the fundamental requirements of the users. Hence this section of the content is chosen as priority before adding new features to satisfy other demands of users.

Prototype technique

sketch

Prototype software

Noteshelf

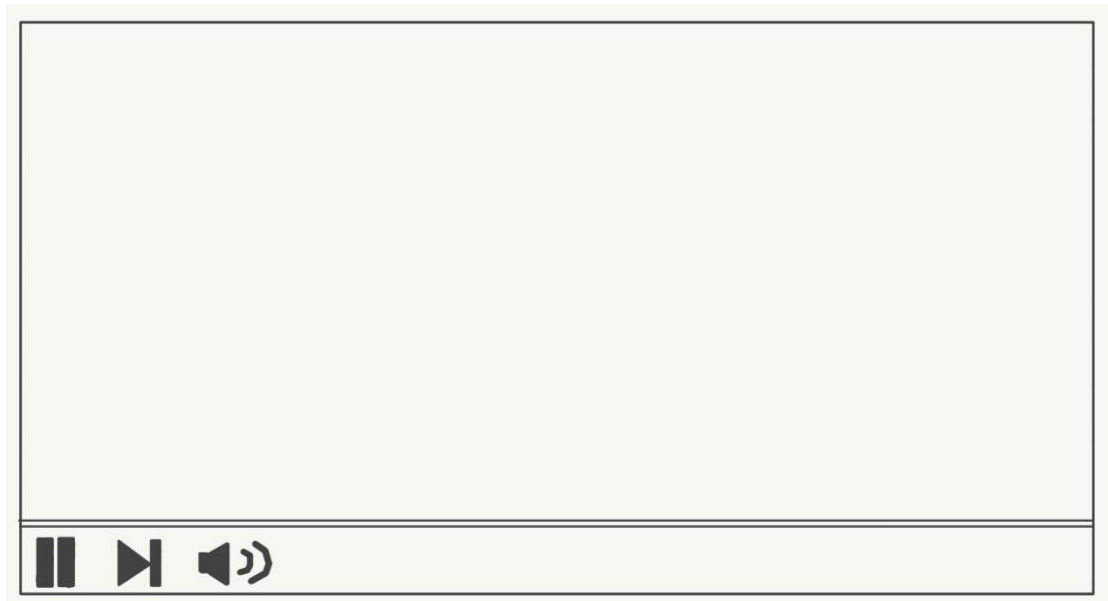
Motivation

The motivation of this prototype is the basic UX theory and the design of simplistic layout. According to the perceptual nature of the four core cues on user experience proposed by McCarthy and Wright (2004), users use the app in such a way that the app can be highly absorbing of their interactions on a sensory level. As a personal video library, the implementation of video playback is the basis for achieving interactive effects with the user. Therefore, this cycle focus on implementing the functions of playing, pausing, playing the next video, adjusting the volume, and opening the video playback file. It composed of a black wireframe and a pure white background. The left side of the bottom bar stores a play button for playing and pausing, a jump button for turning to the next video, and a sound symbol for adjusting the volume on a pop-up bar after clicking it.

Reason for the prototype technique

This is a low-fidelity prototyping technique that is particularly proper in the early stages of the product design. Drawing on canvas is a great way to stimulate creativity, which allows for recording ideas and correcting them as they come to mind. What's more, this is the first iteration of the product, involving fewer features and components and does not require too much technical skill. Sketch is the best technique to get started and is easy and efficient to draw prototypes in a short time.

Evidence



4.1.2 Code

Github

Link: <https://github.com/YangXiao-logic/VideoPlayer/tree/main/v1/OurVideoPlayer>

Video

Link: <https://mymedia.leeds.ac.uk/Mediasite/Play/891bae103a5c429e972cc5cdf1e957fa1d>

Difference

- Compared with the prototype, a volume slider is added for better approaching the practical situation, so users can adjust the volume as much as they can and see the adjusted results
- An opening folder button is also added. Since most of the users don't know to how to change the command line argument of the program, it is more friendly for assisting users to open the video folder.

4.1.3 Evaluation

Evaluation technique

Heuristic evaluation

Reason for the evaluation technique

Heuristics evaluation is employed, which is easy-to-learn and easy-to-use. Most of the well-developed and related heuristic examples commonly used are effortlessly accessible. Also, it is uncomplicated to adopt because of its free structure compared to other methods. This intuitive and easy-to-use nature of heuristics can motivate potential evaluators to use the method. In addition, it does not require much of the evaluator, heuristics can achieve reliable results and help accelerate experience optimization even if the evaluator is not a usability expert. Different people may disagree on the same issue with different opinions. But heuristic evaluation already identifies the corresponding criteria and quantifies the severity of the problem beforehand, avoiding wasting time tinkering with whose idea makes the most sense and improving internal communication efficiency. On top of that, the results are more detailed and allow for a comprehensive scan of the product's current UX design. Severity ratings can be assigned, where usability issues can be organized and resolved according to their severity. In those cases, it is the method that could be used at the initial stage of development work.

Evaluation outcomes

This iteration achieves basic function and was accepted. Due to time constraints some of the dialogs were not implemented, the aesthetics of the interface and the help documentation need to be improved later.

Evidence

| Heuristics | # | Checklist | Y/N/Other | Comment |
|--|-----|--|-----------|---------------------------------------|
| Visibility of System Status | 1.1 | After the video play button is clicked, there will be a response prompt | Y | |
| Match | 2.1 | The shapes of the buttons are in line with other video players | Y | |
| Consistency | 3.1 | The style, size, and spacing of the buttons are consistent | Y | |
| Recognition rather than recall | 4.1 | The prompt text will be displayed when the mouse is hovering over the button | N | Will improve in subsequent iterations |
| Flexibility and efficiency of use | 5.1 | No other functions and components except for video playback | Y | |
| Help and documentation | 6.1 | Help documentation | N | Will improve in subsequent iterations |
| Beautiful and concise design | 7.1 | Conversations should not contain irrelevant information. The design | Other | Achieved a simple interface, |

| | | | | |
|--|--|--------------------------------|--|-------------------------|
| | | needs to be concise and clear. | | but it is not beautiful |
|--|--|--------------------------------|--|-------------------------|

4.2 Cycle2

4.2.1 Prototype

Purpose

In this iteration of the product, 5s-forward, 5s-backward, multiplier, full screen and menu button have been added. For a software that can store and play a large number of videos, functions in previous cycle were too simple, these new features can provide a better playback experience for end users: the forward, rewind and multiplier can let users know the general content of the video in a shorter period of time, and the full screen can provide the immersive watch; since more new features will follow, a menu bar is set to hold the menu widget for them.

Prototype technique

Specialist software

Prototype software

Excalidraw

Motivation

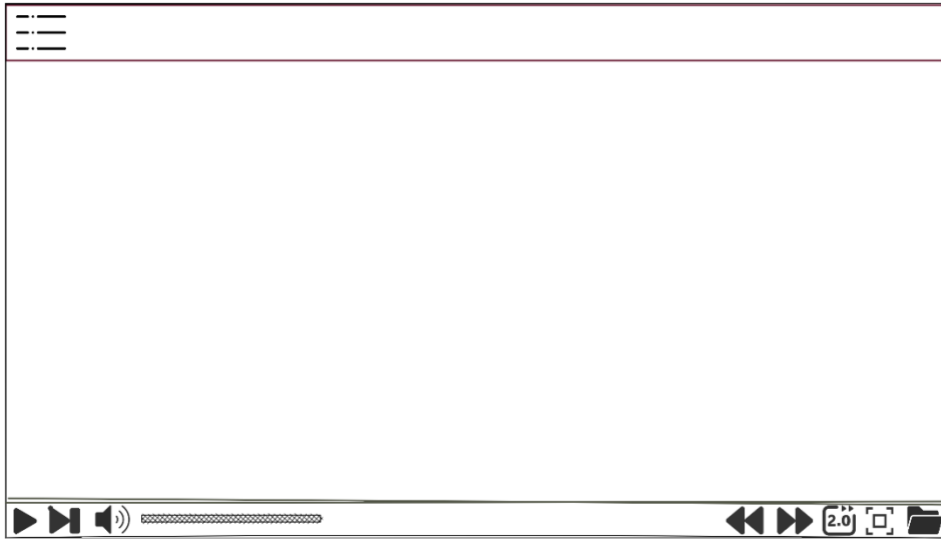
This design mainly refers to the layout of the buttons of the mainstream video playing software on the market. For the three most important buttons: play or pause, next video, and volume adjustment, these three are placed on the far left as a group; other extension functions are placed on the right side of the video as another group. Another alternative design is to put a setting button on the right side of the full screen, properties

like speed, colour and subtitles can be set after tapping it. But in this case, creating a secondary menu for only one function of speed adjustment is a waste of resources, so the new video expansion functions are placed on the right. The design of the menu bar is based on YouTube. To ensure the overall neatness of the interface, the menu widget is not expanded, but placed on the left side of the top as a toggle menu. In this cycle, given the need for users to have a realistic sense of how time speeds up, stands still, and slows down when watching a video, the spatial-temporal line referred to by McCarthy and Wright (2004), several features that enable control of time were deemed necessary, including video playback fast-forward 5s, rewind 5s and multiply playback. In addition, according to the compositional cues mentioned by McCarthy and Wright, the function of playing videos in full screen could lead to a better experience for the user when watching the video.

Reason for the prototype technique

As the product design progressed and increasing widget needed to be added, low-fidelity prototyping techniques like sketch relies too much on the prototyper's art skills, so the specialist professional prototyping software is chosen, whose name is excalidraw. It can quickly outline the layout of the software page using, supporting the insertion of icon, saved in the form of svg which does not lose distortion while zooming. It provides with the most crucial piece of design - borders and lines of the graphics, which presents the similar result of drawing by hand but more accurate and official, which is in line with popular aesthetics as well. It can provide sufficient graphics to be used naturally and fluently to achieve the desired interface design. Precisely, basic graphics required for drawing, such as rectangles, diamonds, arrows, and text functions are supplied. More complicated graphics can be accomplished by extending them and visiting Excalidraw Library.

Evidence



4.2.2 Code

Github

Link: <https://github.com/YangXiao-logic/VideoPlayer/tree/main/v2/OurVideoPlayer>

Video

Link: <https://mymedia.leeds.ac.uk/Mediasite/Play/c63be24f1ff24d288a2b3078a1ae47511d>

Difference

- Compared with the prototype, the cycle 2 program didn't contain the menu and the side bar, because it is not clear that what will happen after clicking the menu and what buttons will be put on the side bar.

4.2.3 Evaluation

Evaluation technique

Heuristic evaluation

Reason for the evaluation technique

The evaluation is clearer and can be targeted at a specific feature. For example, it can accurately locate errors in a certain component and identify its impact on the overall user experience. Besides, team members can test themselves without the participation of others, which does not involve hidden ethical issues and reduces the cost human and material resources. In addition, it can be synchronized with functional testing. The detailed results and the corrections are beneficial to achieve the optimal solution.

Evaluation outcomes

All functions listed is accomplished with some minor defects about user experience, and this iteration was accepted. This part of the feature is difficult to implement, so we put the improvement of user experience such as accessibility in subsequent iterations

Evidence

| Heuristics | # | Checklist | Y/N/Other | Comment |
|------------------------------------|-----|---|-----------|---------|
| Visibility of System Status | 1.1 | buttons have responsive prompts when clicked | Y | |
| Match | 2.1 | The shape of the buttons is consistent with other video players | Y | |
| Consistency | 3.1 | The style, size and spacing of the buttons are consistent | Y | |

| | | | | |
|--|-----|--|---|---------------------------------------|
| Recognition rather than recall | 4.1 | The mouse hovering over the button displays the prompt text | N | Will improve in subsequent iterations |
| Flexibility and efficiency of use | 5.1 | No other functions and components except video playback and menu | Y | |
| Help and documentation | 6.1 | Help documentation is available | N | Will improve in subsequent iterations |

4.3 Cycle3

4.3.1 Prototype

Purpose

The purpose of this cycle is to add more practical and personalized functions to the software. Although basic functions for video playback like pause, volume adjustment have been implemented in previous cycles, the diverse and personalized needs of users are still to be satisfied.

Prototype technique

Specialist software

Prototype software

Excalidraw

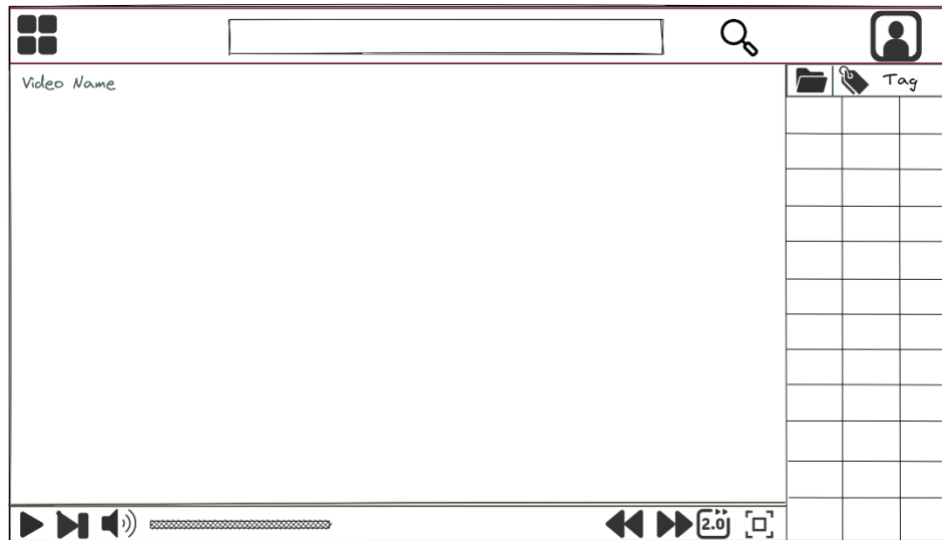
Motivation

Complicated features are intended to be appended in this iteration. First, as a personal video library keeping numerous videos, it is essential for users to find out the video they are willing to watch in the huge database, which promotes the vital creativity of the search function. Moreover, the targeted users of this application are outdoor sports enthusiasts, who possess videos in various topics, such as climbing, biking, skiing, hiking, etc. As a result, customers can classify their uploaded videos by adding tags via tag functions, which also allow them to tag the videos with some personalization. At the same time, the function of managing personal accounts can also enhance the user's personalized experience. These functional designs also correspond to the perceptual line proposed by McCarthy and Wright (2004), which can attract user interaction to a greater extent on the sensory level. Besides, inspiring by the interface design of the two video playback websites, YouTube and Bili Bili, there is also a video list of related videos lying on the right side of the current video playback interface. Such a function can enhance the user experience by improving the continuity of watching.

Reason for the prototype technique

The reason for choosing this technology is the familiarity about the operation because of the usage of the previous cycles. Also, it supports the modification of the background color and border color of a certain component, granting the preliminary knowledge of the overall color scheme and facilitating the final optimization in the last one cycle. What's more, it offers the real-time collaboration, where user can invite others to collaborate space. The interface structure is getting progressively complex, where the layout and functionality trade-offs need to consider the opinions of team members. Each one can write their viewpoint in the collaboration space or make changes directly on the canvas, bringing about more efficiency and convenience. The real-time collaboration sessions are end-to-end encryption, theoretically it is impossible to leak the content of the session to the server.

Evidence



4.3.2 Code

Github

Link: <https://github.com/YangXiao-logic/VideoPlayer/tree/main/v3/OurVideoPlayer>

Video

Link: <https://mymedia.leeds.ac.uk/Mediasite/Play/757cc9389c854b33a5fe9334abe41f831d>

Difference

- For better approaching to practical situation, even though the menu, search button doesn't work, these widgets still are added. When these buttons are clicked, an info message box will be showed to inform user.
- There are some technology difficulties when implementing grid video list. Thus, the video list has only one column as this cycle temporarily.
- Compared with the prototype, in order to enrich the interface content, the program adds two more upload and share buttons, which just to the left of the personal center button.

4.3.3 Evaluation

Evaluation technique

Heuristic evaluation

Reason for the evaluation technique

It can quickly evaluate the usability of the design of the software interface, which is very suitable for our current time-critical and heavy-duty situation. The evaluation method is simple to implement, which does not require detailed planning and information like user samples during the preparation phase and also receives feedback very fast. Whether it is a critical issue in the design to the core functionality or a minor issue in the details, heuristic evaluation will always test it out. In addition, the simultaneous evaluation by multiple people allows for more views and opinions to be gathered, hence a more well-established evaluation of the product is generated, especially with respect to usability. Furthermore, each issue found is explained in detail, so it was easy to fix, especially in the first few iterations.

Evaluation Outcomes

The evaluation results show that in this cycle the new functions are only part of the interface design without actual functions, and it is accepted. In addition, the play list will be implemented in the next loop.

Evidence

| Heuristics | # | Checklist | Y/N/Other | Comment |
|-----------------------------|-----|--|-----------|---------|
| Visibility of System Status | 1.1 | After the video play button is clicked, there will be a response | Y | |

| | | | | |
|--------------|-----|--|-------|--|
| | | prompt | | |
| | 1.2 | The corresponding dialog after the menu button is clicked | Y | |
| | 1.3 | When the search button is clicked, all videos in the personal video library can be searched. | N | The search button is only part of the interface design and has no actual function. |
| | 1.4 | When the tag is clicked, the video list will display corresponding video with that tag | N | The tag button is only part of the interface design and has no actual function. |
| | 1.5 | When the video on the list is clicked, it is playing | Other | This function may be implemented later in the iteration. |
| Match | 2.1 | The shapes of the buttons are in line with | Y | |

| | | | | |
|--|-----|---|---|---|
| | | other video players | | |
| Consistency | 3.1 | The style, size, and spacing of the buttons are consistent | Y | |
| Flexibility and efficiency of use | 5.1 | No other functions and components except for video playback | Y | |
| Help and documentation | 6.1 | Help documentation | N | This function may be implemented later in the iteration. |
| Beautiful and concise design | 7.1 | Conversations should not contain irrelevant information. | N | The video playlist on the right side of the interface is a bit cumbersome and not concise enough. |

4.4 Cycle4

4.4.1 Prototype

Purpose

Advanced function buttons should be added to beautify the interface in this cycle as well as the responsive layout and the event. To be specific, the purpose of 'note' function is for facilitating users adding text description for every video to remind them of the content of the video. Additionally, aiming at storing, backing-up and sharing resources, there are extension functions on the buttons of 'upload', 'share' and 'account' which also charges advanced account fees. Notably, these functions do not work normally but for beautifying the interface. Moreover, responsive layout, and key event are added in this cycle. The interface layout will change with the change of window size. Seconds advance/rewind, quit full screen mode, volume adjustment and play/pause could be controlled using directional keys on keyboards.

Prototype technique

Native prototyping technique

Prototype software

Qt Designer

Motivation

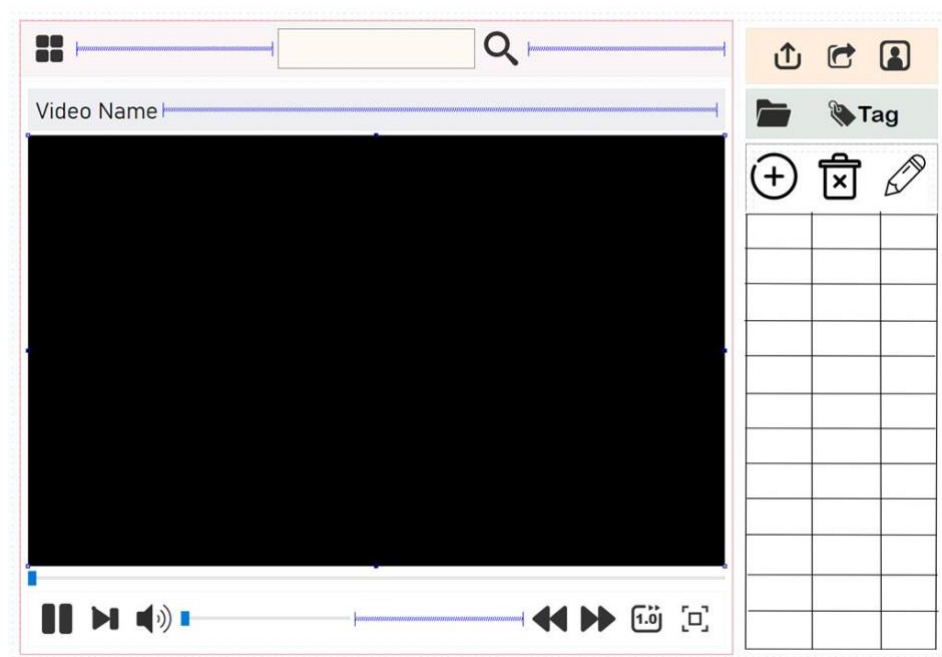
In this cycle, the "note" function is added to the design of the interface. In contrast to the "tag" function, which allows the user to tag the video with a short descriptive word such as #fall, #team, #Leeds, #climb. The "note" function allows the user to describe the main content of the video in more detail, such as a few sentences. When designing this feature, the perceptual line proposed by McCarthy and Wright (2004) is also

considered, which highly engages with the user on a sensory level and stimulates their emotions.

Reason for the prototype technique

Qt Designer's visualization tools for layout are selected to improve the efficiency of development at the later stage of the product when all the functions and interfaces had to be perfected. The prototype can be used directly in the development work, to focus on the interface when prototyping, which gives an overall grasp of the product, and to create functions directly on the components when developing the functionality.

Evidence



4.4.2 Code

Github

Link: <https://github.com/YangXiao-logic/VideoPlayer/tree/main/v4/OurVideoPlayer>

Video

Link: <https://mymedia.leeds.ac.uk/Mediasite/Play/08cf5a2206c84f359b2d692c89cc76901d>

Difference

- The note buttons including new note, deleting note and edit note are too redundancy for the user experience, thus, in the program, these buttons haven't been implemented.
- After considering the aesthetic degree, the grid video list is abandoned.

4.4.3 Evaluation

Evaluation technique

Cognitive Walkthrough and questionnaire

Reason for the evaluation technique

Cognitive Walkthrough takes the responsibility of users' evaluation task. It is efficient, cost-effective (User Experience Professionals' Association, 2011) and holds a high coverage rate of the functions on the interfaces. On the condition of less time for evaluating at sprint phase, this method is appropriate to evaluate the newly added features. Regarding the questionnaire, in order to optimize the next step, this project designed a questionnaire survey to allow external personnel to experience the software functions and provide feedback, to optimize the program more comprehensively.

Evaluation outcomes

The software achieves a range of basic functions, but the interface is not good enough. For example, the function of 'note' is unnecessary, and the button position for 'share' and 'upload' is not proper. However, for every basic function, it is very friendly and clear to users. Furthermore, the color of interface is too monotonic for users.

Evidence

The table of evaluation (Terveen, n.d.)

Step1: Will users be trying to produce the right outcome?

Step2: Will users see the correct action they need to perform to produce the outcome?

Step3: will users recognize that this is the action they need to take to achieve the correct outcome?

Step4: Will users understand the feedback?

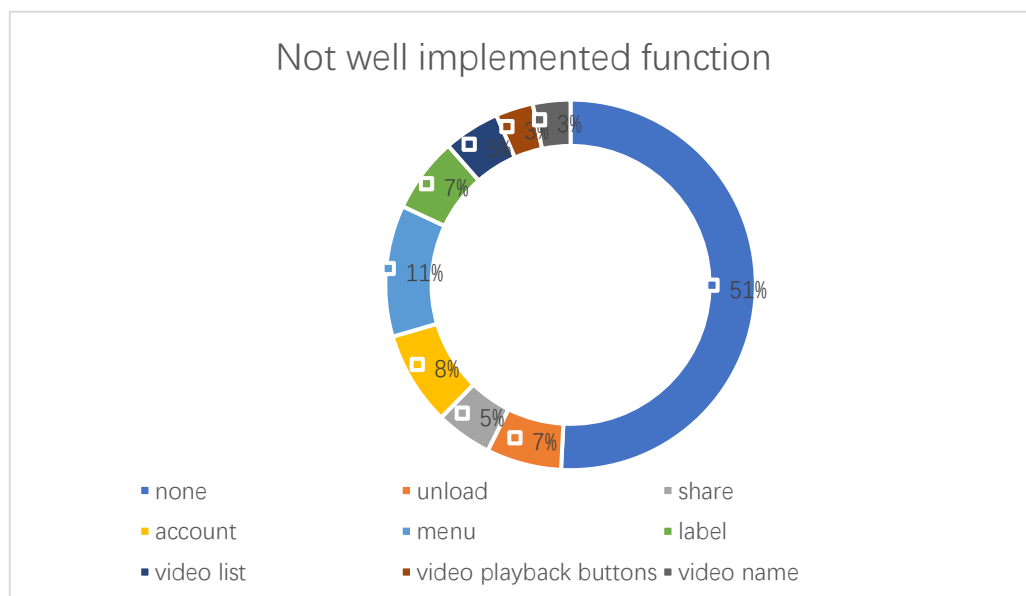
C: clear V: vague I: impossible

| Scenario | Step1 | Step2 | Step3 | Step4 |
|------------------------------------|--------------|--------------|--------------|--------------|
| Search video (fake) | I | C | C | C |
| Manage account (fake) | I | C | C | C |
| Share video (fake) | I | C | C | C |
| Upload (fake) | I | C | C | C |
| Open native video library | C | C | C | C |
| Set a tag (fake) | I | C | V | V |
| Check play list | V | V | V | C |
| Play/pause | C | C | C | C |
| Multi-speed playback (fake) | I | C | C | C |
| Fullscreen | C | C | C | C |
| Switch to next | C | C | C | C |
| Switch to previous | I | I | I | I |

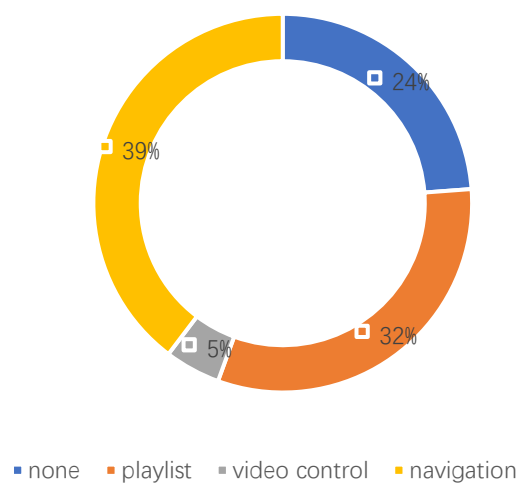
| | | | | |
|---------------------------------------|---|---|---|---|
| 5 seconds jump using button | C | C | C | C |
| 5 seconds jump using keyboards | C | C | C | C |
| Menu (fake) | I | V | V | I |
| Responsive | C | C | C | C |
| Volume adjustment | C | C | C | C |

Questionnaire is available at:

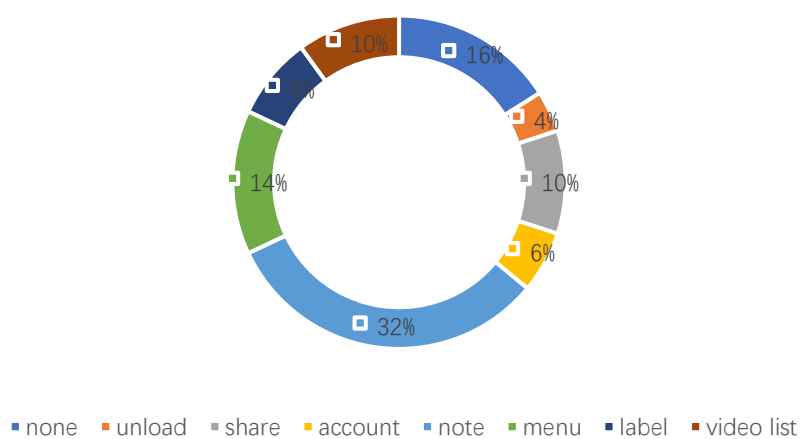
https://docs.google.com/forms/d/e/1FAIpQLSe0vCNjvJ_zSTNvLwWo6sdrNRP0I4Z9W7wO4A84biYxY8p6xA/formResponse



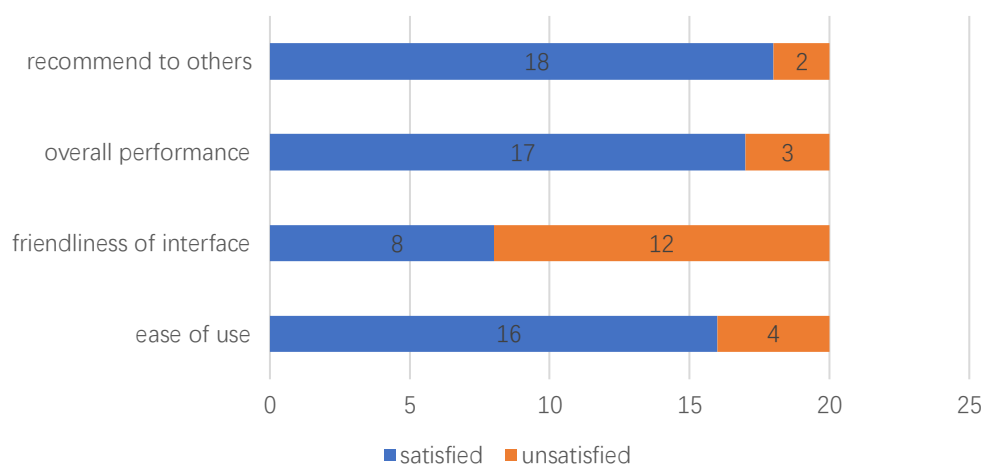
Unsatisfactory interface module



Unwanted features



feeling of using



Based on the first figure, the functions of this project have basically been realized. Driving from the second figure, this project needs to review the playlist and navigation, and optimize the page layout and style. Besides, this project will assess the note function. If the optimization fails to meet expectations, this function will be deleted according to the third figure. Also, this project will optimize the interface style in the next iteration since interface is the most unsatisfied choice.

4.5 Cycle5

4.5.1 Prototype

Purpose

This cycle is designed to remove redundant components and refine the interface layout. Canceling the 'note' function and its corresponding buttons, deleting the useless 'menu' button, changing the sorting of playlists from grid to list, and coloring the interface.

Prototype technique

Native prototyping technique

Prototype software

Qt Designer

Motivation

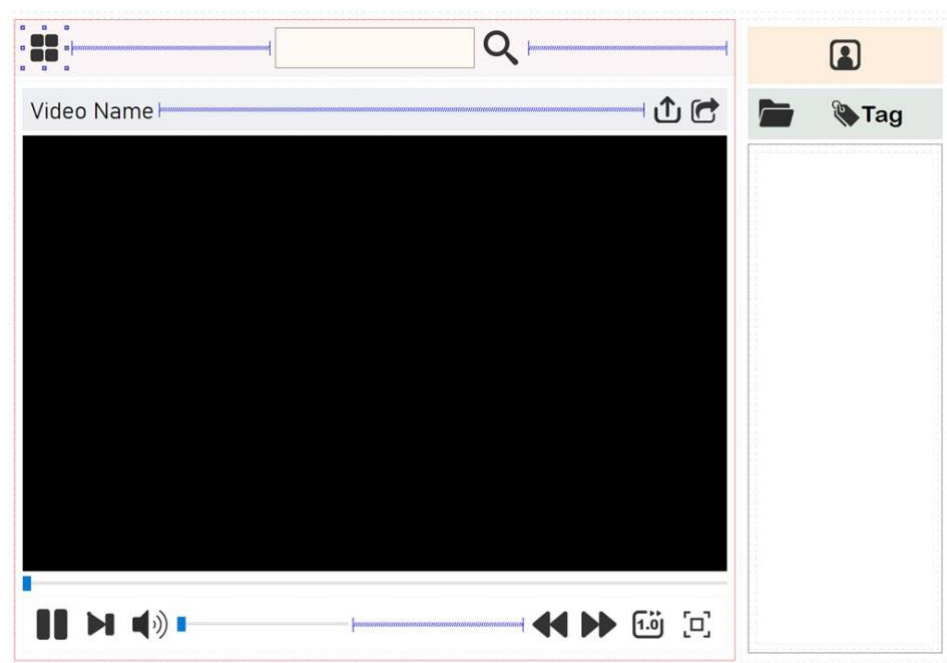
This prototype is mainly motivated by the previous evaluation and other video websites. The number of videos in the video list has been reduced from three in a row to one in a row. This makes the user interface simpler and clearer, without making the video playlist feel dense and cluttered. It is also based on the user's experience. This is the case with some of the major video players such as YouTube and Bieping, where such video playlists are also used. Based on the compositional cues proposed by McCarthy and Wright (2004), this leads the user to use the video player in a coherent way by

associating it with the user's previous experience of using it.

Reason for the prototype technique

For the last cycle, native prototyping technique and Qt Designer are still adopted. The changes from cycle 4 to cycle 5 are mainly functional deletions, with very few modifications in the code. Therefore, so Qt Designer is employed to reduce the components based on the cycle 4 prototype, which improves the speed of the prototyping.

Evidence



4.5.2 Code

GitHub

Link: <https://github.com/YangXiao-logic/VideoPlayer/tree/main/v5/OurVideoPlayer>

Video

Link: <https://mymedia.leeds.ac.uk/Mediasite/Play/115b192f9e2542d9ab1b8217270572231d>

Difference

- A little difference between prototype and program is that program can show the video progress directly, for example, the video progress can be showed as this format: 0:03/0:18.
- A Logo replace the menu button, because of the difficulties of implementing the menu function, the menu button is useless in this program, thus, for the beauty of the user interface, the menu button has been replaced by a Logo.

4.5.3 Evaluation

Evaluation technique

Cognitive Walkthrough

Reason for the evaluation technique

Cognitive Walkthrough is utilized to evaluate cycle 5, which is an effective method at every stage of development. Furthermore, it can be completed without firsthand access to users. It is not realistic to provide detailed instructions to each user after the release of the software, thus this method is suitable for the acceptance of the project (User Experience Professionals' Association, 2011).

Evaluation outcomes

Generally, basic functions are friendly and clear to users and this iteration is accepted. However, some evaluator presented hesitation when recognizing bottoms of advanced function such as 'setting tags' or 'uploading'. Overall, the software implements a range of basic and bottoms display of some advanced features, strikes the perfect balance between functionality and aesthetics, which is inexpensive to learn and deliverable.

Evidence

The table of evaluation (Terveen, n.d.)

Step1: Will users be trying to produce the right outcome?

Step2: Will users see the correct action they need to perform to produce the outcome?

Step3: will users recognize that this is the action they need to take to achieve the correct outcome?

Step4: Will users understand the feedback?

C: clear V: vague I: impossible

| Scenario | Step1 | Step2 | Step3 | Step4 |
|------------------------------|-------|-------|-------|-------|
| Manage account (fake) | I | C | C | C |
| Share video (fake) | I | V | C | C |
| Upload (fake) | I | V | V | C |
| Check play list | C | C | C | C |

5. Demo Video

Link: <https://mymedia.leeds.ac.uk/Mediasite/Play/c943471a49104ae1969c356980d8b97c1d>

6. Ethics statement

The whole process of the project is carried out in accordance with the moral and ethical standards, and the university policy is strictly implemented. It has fully considered a wide range of issues, many of which is specific to the disciplines involved - Computer Science and technology, and also ensures compliance with the University's policies (Nadin) in the fields of health and safety, intellectual property rights, research integrity, data protection and prosecution. The following is a list of ethical considerations

covered by the project:

- the balance of risk and benefit
- the physical and psychological health and safety of subject-participants
- obtaining informed consent to participant
- particular arrangements for vulnerable subjects
- conflicts of interest
- confidentiality and data protection
- intellectual property issues
- funding sources
- monitoring and audit
- proportionate and reasonable review

✧ Legality

Research design must answer specific research questions (Martin). Therefore, the conclusions of the research must be relevant to the questions raised and the results obtained. In this project, six people worked together to design and develop a video playback software, and finally got the results corresponding to the purpose. In addition, the methods used in the research ethics requirements are directly related to the research question.

✧ Voluntary participation and consent

No individual should be forced to participate in research, and researchers should not gain trust through persuasion or deception of any kind. (Martin) The informed consent form stipulates that the individual must explicitly agree to participate in the research. This project has customized a complete consent form for individuals to understand, which fully meets this requirement.

✧ Sampling

Sampling is the first step in research design. This project requires people other than internal personnel to test and use the program and provide different perspectives and

opinions. This will greatly help the final modification of this project.

✧ Confidentiality

The third ethical principle of the Social Research Council (ESRC) states: "The information provided by the research object must be kept confidential, and the anonymity of the interviewee must be protected." (Martin)

✧ Risk of injury

Research participants should be protected as much as possible (Martin). For this reason, this project needs to pay attention to the ratio of risk to benefit. If the possible risks outweigh the benefits, then we should abandon or redesign the research. The risk of harm also requires us to consider the ratio of risk to benefit during research. The tests in this project are not lethal and are extremely safe for research participants, ensuring the safety of participants in all aspects and minimizing risks.

Benefits of the research

1. The research will be conducted in a way that guarantees the quality of the results and ethical integrity.
2. Research results will be published in a reasonable manner.
3. The research purpose is clear and the method is appropriate.

Moral integrity

For the conducted research, ethical integrity and transparency are essential (Souza). Based on the requirements of the Ethics Committee, any actual or potential conflicts of interest in the work will be disclosed. In addition, throughout the approval process and research process, this project will always abide by the principles of ethics and integrity and be transparent and open.

| | |
|--|---|
| <p>Consent to take part in [OurVideoPlayer]</p> | <p>Add your initials next to the statement if you agree</p> |
| <p>I confirm that I have read and understood the information sheet/letter</p> <p>[22.11.21] Date [19.12.21] Explain the above research project, and I have the opportunity to ask questions and ideas about this project.</p> | |
| <p>I understand that I participate in this project voluntarily, and I can quit freely [at any time, without any reason/until [19.12.21]], and will not have any negative consequences. In addition, if I don't want to answer any specific questions, I can decline.</p> <p>Insert the contact number of the lead researcher/research team member here (subject to availability).</p> <p>[Include a statement about what will happen to the data that has been provided after exiting the study.]</p> | |
| <p>I understand that members of the research team may have access to my [anonymous-if applicable] responses. I understand that my name will not be associated with research materials, and I will not be identified or identified in reports or reports generated by the research.</p> <p>I understand that my answer will be kept strictly confidential [only in true circumstances].</p> | |

| | |
|---|--|
| I understand that the data collected from me may be stored and used for related future research [in anonymized form], or I understand that the data I provide may be archived in [sc19yx_sc19j3l_sc192yl_sc19yz3_sc19lr_sc19c2z.zip]. [If applicable] | |
| I understand that relevant parts of the data collected during the research period may be viewed by individuals at the University of Leeds or by regulatory agencies related to my participation in this research. [If applicable] | |
| I agree to participate in the above research projects. If my contact information changes, I will notify the lead researcher. | |

| | |
|--|--|
| Name of participant | |
| Participant's signature | |
| Date | |
| Name of lead researcher [or person taking consent] | |
| Signature | |
| | |

7. Description of running

Using following steps to download the project:

- This video player relies on windows platform.
- Open the command line, type `git clone https://github.com/YangXiao-logic/VideoPlayer.git` , press enter to download the project.
- After downloading project, you can choose the folder of the version you want to run.

- You also may need to download the [video](#) which provided by tom to test the project. For all the videos you want to play, you need to provide a .png file, a .wmv file and a .mov file, the filename of these three files must be equal.
- Open the .pro project in Qt Creator. You will probably have to configure Qt 5: On Windows use Qt 5 to use the multimedia plugin. This project is developed based on Qt 5.13.2. So, there might be compiler problem when using other versions of Qt.
- Run the project. When a dialog pops up, click the open file button, then choose the folder which contains the videos.

8. Reference

Benyon, David. *Designing Interactive Systems: A comprehensive Guide to HCI, UX and Interaction Design*. Harlow, England, Pearson, 2014.

Kelly, T. 2021. User Interface. XJCO2811. 9 September, University of Leeds.

Martin, Lockheed. 2018. *PART of SUPPLIER TRAINING EXCELLENCE PROGRAM (STEP) and ETHICS SUPPLIER MENTORING PROGRAM WEBINAR SERIES WHY YOU NEED an ETHICS PROGRAM and HOW to GET STARTED TODAY*. [online]. [Accessed 12 Dec. 2021]. Available from:

<https://lockheedmartin.com/content/dam/lockheed-martin/eo/documents/suppliers/training-2018-why-you-need-an-ethics-program.pdf> .

Nadin, Timothy. 2010. "Research Data Guidance." Research and Innovation Service. [online] [Accessed 19 Dec. 2021] Available from:

<https://leeds365.sharepoint.com/sites/ResearchandInnovationService/SitePages/Research%20Ethics.aspx>.

Preece, Jenny, et al. *Interaction Design: Beyond Human-Computer Interaction*. Chichester, West Sussex, John Wiley & Sons Ltd, 2015.

Souza, Rachel. 2003. "Research Data Guidance." [online]. [Accessed 14 Dec. 2021]. Available from: <https://ris.leeds.ac.uk/research-ethics-and-integrity/ethics-and-ethical-review/> .

Terveen, L. n.d. Cognitive Walkthroughs - Evaluation without Users (Part 1).

Coursera. [Online]. [Accessed 19 December 2021]. Available from:

<https://www.coursera.org/lecture/ui-testing/cognitive-walkthroughs-CJvI6> .

User Experience Professionals' Association. 2011. Cognitive Walkthrough | Usability Body of Knowledge. [Online]. [Accessed 19 December 2021]. Available from:

<https://www.usabilitybok.org/cognitive-walkthrough>.