A study in (HCI) Human Computer Interface

Project Planning

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1 Abstract

In the later 1970s, the emergence of software and computing such as text editor made everyone a potential computer user.[i] Computers and humans are becoming more closely integrated. As opposed to the days when they were only able to talk to each other in person, to the present day, most have become bow-headed individuals, constantly interacting with the Internet. They found the usability limitations of computers. Thus, studying the human-machine interface becomes necessary to improve its usability.

Interaction between people and computers is known as human-computer interaction (HCI) and focuses on human-computer interaction as an interface.[ii] Human Computer Interface can obverse different type of people to create technologies to facilitate innovative interactions. That enhance the overall usability, productivity and reduce the risk of system. For example, using internet is not only for teenager, but also for elder people. As a group, the elderly tends to have inadequate proficiency with a variety of functions. Due to the fact that they rarely handle electronics and are unfamiliar with many operations. In spite of this, HCI was able to study their weaknesses in order to improve the interface's operation and design for a desired property.

Human Computer Interface includes three components: human, computer, and the relationship between them[iii]. About human, they will have different type of memory and perception and speech and voice. For the computer, it has screen for human visual, trumpet for human auditory and input devices for human tactile. This relationship between them is essential for Human Computer Interface. Therefore, Norman's model of interaction[iii] (HCI execution-evaluation cycle) is for designing a efficient system process. During the model, we can improve the system following by three conflict, gulf of execution, gulf of evaluation and human error. For HCI, ergonomics also is the one of component to design the best performance for user such as display function and colors catering color blind.

Norman's model of interaction: Establish the goal, Formulate the intention, Specify actions, Execute action, Perceive system state, Interpret system state, Evaluate system state

In this project, I will design and implement three different software interfaces such as website, database with one topic small online shopping. During the design, I will follow the Norman's model of interaction. For the step of design process, I will do research of user who will use the software and its requirements analysis. Building some specific guide of the design can efficiently meet the requirement of those users. Afterward, I will start design the idea followed by the analysis statistic and solve the issues of each different users. Finally, evaluate the whole product has been built that is it met the goal of the website and the requirement of possible users.

Following HCI design, I will compare different interfaces and so some survey for different type of user on HCI about software and hardware interfaces. Each content will directly record inside the report and the statistic sheet I will build inside my Gitlab.

2 Timeline

Aiming for developing an advanced website which matching Human Computer Interface, my plan will be focus on research and analysis of my initial website design idea during term one and focus on improvement and evaluation in term two. I would plan to design a mobile interface if the plan go smoothly.

2.1 Term 1

Week 1-2: Read bibliography Study Human Computer Interface.

Week 3: List and do HCI task analysis for evaluation of the following developments.

Week 4: Design the base of webpage and three different software interfaces.

Week 5-7: Implementation the first interface(website) by comparison of various user interfaces.

Week 8: Evaluate the first interface meet the goals of HCI and make improvement.

Week 9: Start the second interface(database) by comparison of various user interfaces.

Week 10-11: Prepare for interim report and presentation.

2.1 Term 2

Week 1-2: Implementation of the second interfaces by comparison of various user interfaces.

Week 3: Evaluate the second interface meet the goals of HCI and make improvement.

Week 4-6: Implementation the third interfaces by comparison of various user interfaces

Week 7: Evaluate the third interface meet the goals of HCI and make improvement.

Week 8-9: Re-evaluate the final design and interface and do comparison

Week 10-11: Prepare for final report and viva.

3 Risks and Mitigations

It is inevitable that every project will have risks, so it is necessary to predict the existing risks and countermeasures before doing the project. In this section, I will list its risks and mitigations to avoid any failures.

3.1 Hardware Failure

For implementing interfaces and analyzing data, hardware is the primary tool in this project. When my project is brought down by hardware failure, it results in a direct failure. There is no way we can predict an accident, but it is possible to reduce the cost of hardware failure by using the advantages of software. Throughout the project, I keep using the Gitlab platform. A version control system will be used to keep track of all the implemented code for mitigating the risk of data loss. About the report, I will use online Microsoft word and keep track of each vision I write every day.

3.2 Overestimation of task

For the project to succeed, time planning is essential. However, unrealistic time estimation always happens to everyone occasionally when trying to estimate how long tasks and projects will take. That's led to everything of the project will overrun and incapable of completing the original plan. In order to mitigate the risk of overestimation, I will use Trello to remote the sub-task every day and week, make sure I done all the tasks of week following by the original planning. It is better to follow clear plans including how long they should take for finishing the tasks in each day and week.

3.3 Lack of Knowledge about different age groups

As a student, I am a teenager who has a limited perspective of other age groups such as elder people. However, PCs and humans should interact closely as if they were human-to-human. In particular, I am studying how people interact with PCs and technology. Even different age groups have close keys. In this case, I will try to find out the answer inside some website and reference booklet or do a survey to analyze different age groups facing different interfaces.

4 Bibliography

4.1

Alan, D., Janet F., Gregory D. A., and Russell B. (2004) Human-Computer Interaction. 3rd ed. *Pearson Education.*

Reason: Know more about Human computer Interaction. There are some sample for me to analysis each development and study how to design interface in the better way.

4.2

Ben S. et al. (2016) Designing the User Interface: Strategies for Effective Human-Computer Interaction. 6th ed. *Pearson Education*.

Reason: Learn the techniques for designing the interface on HCI. It make the project on the right track for designing the interface smoothly.

4.3

Jeff J. (2010) Designing with the Mind in Mind: Simple Guide to Understanding User Interface Design Rules. *Morgan Kaufmann*.

Reason: It give many example about GUI design for me to take a references and the rules of HCI can make me clearly understand the main property for doing the software.

4.4

Jakob N., Hoa L. (2006) Prioritizing Web Usability. *New Riders.*

Reason: Studying what the rules of usability for designing a interface. I can more understand what user actual need when using a software.

4.5

Alan C. (2014) About Face: The Essentials of Interaction Design. 4th ed. *Wiley*.

Reason:

4.6

Yvonne R., Helen S., Jenny P. (2011) Interaction Design: beyond human-computer interaction. 3rd ed. *Wiley*.

Reason: Using the process that it mentions inside the book. It will more efficient to done the software.

References

[i] Carroll, J.M. (2014) The Encyclopedia of Human-Computer Interaction, 2nd Ed. The Interaction Design Foundation. Chapter 2. https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/human-computer-interaction-brief-intro

[ii] Vijay K. (2022) What Is HCI (Human-Computer Interaction)? Meaning, Importance, Examples, and Goals. *[online]* https://www.spiceworks.com/tech/artificial-intelligence/articles/what-is-hci/

[iii] Alan, D., Janet F., Gregory D. A., and Russell B. (2004) Human-Computer Interaction. 3rd ed. *Pearson Education*. Chapter 1-3