

PART 1 - A BRIEF HISTORY OF HCI AND ITS RELEVANCE TO CONTEMPORARY COMPUTING

(1000 words max)

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Human-computer interaction (HCI) is the multi-disciplinary field concerned about the designing, evaluating, and implementing process of proper interfaces between humans and computers. The fundamental aim of such field is to observe such interaction to ensure and work upon better approaches as to better facilitate them. As our constant progress in technology occur, so does the way we interact with it. We look no farther than our homes and notice our helpful assistant, Alexa, for instance. I am sure everyone is at least familiar with Siri if not using it at some point or the other. Throughout this essay, I aim to walk you through the brief history of HCI, introduce you to the world of AI and Machine Learning in our living spaces, evaluate their impact on HCI, and lastly draw attention to the potential opportunities as well as challenges of AI and Machine Learning.

The earliest research we see in the field of HCI points back to the early years of 1960s (Kuutti, 2009), by the time of Command Line Interface (CLI) being introduced, which could only be used by professionals with technical knowledge (Norman, D.A., 2013). With the technological advancements, during the 1970s-1980s period, personal computers started becoming a part of our homes and workspaces (Bannon, 2011). In this period, they were designed to be used personally, an individual approach paying attention to the “usability” factor as obstacles were being observed for the successful conduction of the individuals’ tasks (Carroll, 1997).

Later in the early 1980s period, the Graphical User Interface (GUI) outshined the Command Line Interface (CLI), as the intuitiveness became a factor highly sought after by the casual user (Morgan et al., 1991).

With the introduction of Web, the individualistic approach shifted towards one that focuses on collaborative usage, mainly in the workspaces (Grudin, 1990). With the expansion of usage means towards interaction with other users, fields concerning humans such as sociology became a part of the research area, making HCI became more inter-disciplinary (Thomas, 1995). New technologies were investigated to provide users with problem-solving collaboratively.

Not so long before today, smartphones climbed on top of the most crucial technological releases in history, as a fully functional stand-alone tool with an easily utilizable touchscreen which later paved the way of touch screen technology to be more popular in other devices such as PCs, not as essential to interact with the device, but as an alternative method from the technology suppliers (Bloomberg, 2023).

Human-Computer Interaction (HCI) has greatly influenced technological progress by enabling transitions to graphical and touch-based interfaces and fostering partnerships with psychology and design disciplines. The incorporation of AI has resulted in more dynamic interfaces, enhancing user experiences. The evolution of HCI underscores its crucial role in redefining interactions with technology and anticipating the future of ubiquitous computing.

In the recent times, Augmented Reality and Virtual Reality entered our lives as well as devices with speech recognition technology, providing a new way of interacting using only your voice, especially useful for people with disabilities, but is nowadays used by many people, increasing each day. With the emergence of IoT (Internet of Things), smart home assistants can connect to your gear, such as your fridge and curtains even, allowing you to interact with these objects using only speech. As IoT develops further, the networks between these objects could develop and potentially lead to homes with automatic systems and such.

The merging of AI, ML, and HCI carries significant implications across industries. In healthcare, AI-driven diagnostic systems aid physicians in interpreting medical images, hastening diagnoses with greater precision. Similarly, in entertainment and gaming, AR and VR innovations deliver immersive experiences, bridging reality and the virtual realm. Games like Pokémon Go and VR simulations for training underscore the transformative potential of these technologies in entertainment and educational domains. HCI also plays a crucial role in shaping the development of autonomous vehicles, guaranteeing user-friendly interfaces for effective interaction. Companies such as Tesla prioritize HCI research, while AI-driven personalization revolutionizes e-commerce platforms like Amazon.

Nowadays, impacted from the developments in the AI and ML in our living spaces, HCI not only is concerned about individualistic or collaborative use, but it also focuses on how it can make the user feel a certain emotion. A perfect example to this is the production and evaluation stages of a Bentley car before their release. Not only they are equipped with a top-notch craftsmanship but also are perfected with a flawless blend of technology and emotions, creating the formula to success for the company. Bentley has people dedicated for the sole purpose of testing how the car feels, testing all the interactions, from the touch feeling of pressing a button to the click of the seatbelt.

Another great example is Apple's new product, Apple Vision Pro. With the company's recent release of Apple Vision Pro in the US, we now see an evolvement towards achieving a mixed reality, creating our own personal virtual space in the real world without interfering with the other peoples'. As with any newly developed technology, people have misconceptions, as well as curiosity to experience the ever-expanding borders of interfaces. Based on the development history of HCI, I believe this personal space experience will evolve into being able to share the space you've created with others, and collaboratively using them. Famous YouTubers having a demo with the device often already state they want to do this, and they wonder how doing something together as a family, such as watching TV would evolve. Again, we can see how "touching upon our senses" create value to us.

To conclude, in the forthcoming years, the realm of artificial intelligence (AI) and machine learning (ML) holds significant promise and accompanying challenges (Russell & Norvig, 2022). These technologies offer transformative potential across various sectors, facilitating advanced automation, customized interactions, and refined decision-making processes (Floridi & Cowls, 2019). As AI and ML become increasingly integrated into everyday life, prioritizing transparency, accountability, and inclusivity becomes imperative (Mittelstadt et al., 2016). Meanwhile, the field of Human-Computer Interaction (HCI) has evolved alongside technological advancements, fundamentally altering our interactions with computers (Brynjolfsson & McAfee, 2017). Through the integration of AI and ML, HCI has facilitated customized experiences in sectors such as healthcare and entertainment. Future advancements promise further innovation, exemplified by products like Apple Vision Pro, which offer tailored virtual environments. Challenges persist, including dispelling misconceptions and ensuring fair access. By prioritizing a user-centric approach, HCI can continue to drive progress while addressing societal concerns, remaining instrumental in shaping the future of computing for enhanced user experiences.

References

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PART 2 - COOPERATIVE EVALUATION – USABILITY REPORT (1000 words max)

USABILITY evaluation and user requirements for: Forest App by SEEKRTECH CO., LTD.

Evaluation Prepared by: 230404296

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Date Test Conducted: 20/02/2024

Evaluation report number: [1]

Executive Summary

By evaluating the app, three issues were raised. These issues are all concerns of navigation in the app.

The major issue was most of the users not being able to find the Study Mode switches on Task 2, leading to frustrating them. The icons for the modes currently look like switches instead of buttons leading to a small menu. If possible, they could be removed from the main screen and added to the Session Menu to prevent any confusions. If this is not possible an alternative option would be changing the icon designs and as they are too small, they could be made bigger.

A minor issue was not being able to tell if Forest or Real Forest was leading to the Forest Overview in the Menu. This could be fixed by renaming the Real Forest to something else like Your Contributions.

And lastly, another minor issue was not being able to find the filters on Task 3. The filters can be removed from Overview and a separate bubble icon could be placed on the top right-hand side.

Product details

Product name and version number (if applicable): Forest: Focus for Productivity Version 4.73.1

Elements or functions of interface evaluated: Study session in the main screen, Forest Overview in the toggle Menu, Mode Menu.

Intended user groups for product: University students currently enrolled in a Master's program.

Training required to use the interface: Yes / ☒ No

Purpose of product (what is it for?): The purpose of Forest app is to keep you focused on your study, creating sessions, and keeping track of how much you studied.

Where is product designed to be used: The product is designed to be used while studying, therefore it can be used anywhere where studying would be applicable.

User Test Details

Number of users tested: 3 (lone users)

Participant details:

User 1

22

Female

Full-Time Master's Student

Moderate experience in using Study-Focus Apps

Some familiarity with another similar app of the company, SleepTown, to keep track of sleep

User 2

24

Male

Master's Student & Software Engineer

Moderate experience in using Study-Focus Apps

Some familiarity with similar Study Apps

User 3

26

Female

Full Time Master's Student

Little to no previous experience in using Study-Focus Apps

Little familiarity with Study-Focus Apps, uses academic journal instead of digital platforms

Length of test session (per user): about 15 minutes

Location of user test: Quiet common room of student accommodation dorm

Method Used: Cooperative Evaluation (Think Aloud Protocol)

Data collected: audio recording and observational notes

User task(s) conducted:

1. Plant a tree to start a study session of 25 minutes. While doing so, select a tree type of your choice and tag the study session by creating your own custom tag with the name and colour of your choice.

2. Open the plant together mode to create a room for someone else to join and study together. Turn on your deep focus and count exceeded time modes. After I join the room, start the study session.

3. Open and look at the Menu. View your Forest to check your focus trends and find out how many trees were planted that month, most focused period of the day, tag distribution percentages for the year, and the favourite tree species for the month. Filter the data based on the Study Tag.

**Brief note on severity ratings*

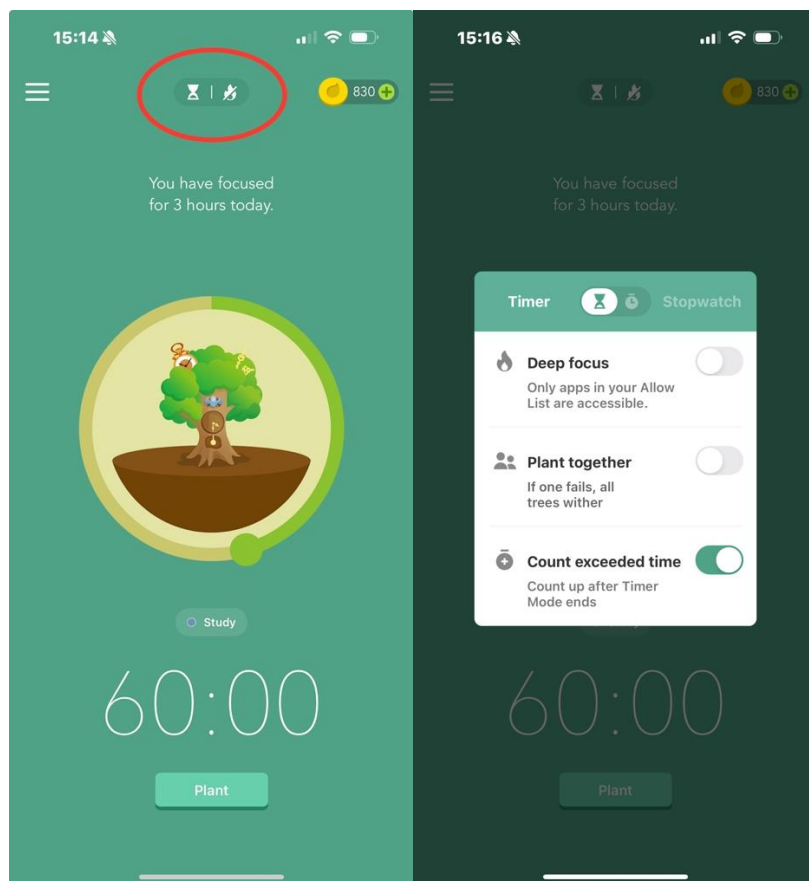
1. *Cosmetic problem only: need not be fixed unless extra time is available on project*
2. *Minor usability problem: fixing this should be given low priority*
3. *Major usability problem: important to fix, so should be given high priority*
4. *Critical issue: imperative to fix this before product can be released*

Evaluation Results

Incident Log [1]

Incident Description:

While performing Task 2, two of the users struggled to find where the modes are. They searched through the Menu. The icons leading to modes are too small and therefore users have stated they either didn't notice them, or didn't think the modes would be in there. One of them said that he thought those were toggle buttons, to switch something on and off, and that it wouldn't lead to a pop-up, before tapping them. The users stated they got really frustrated.

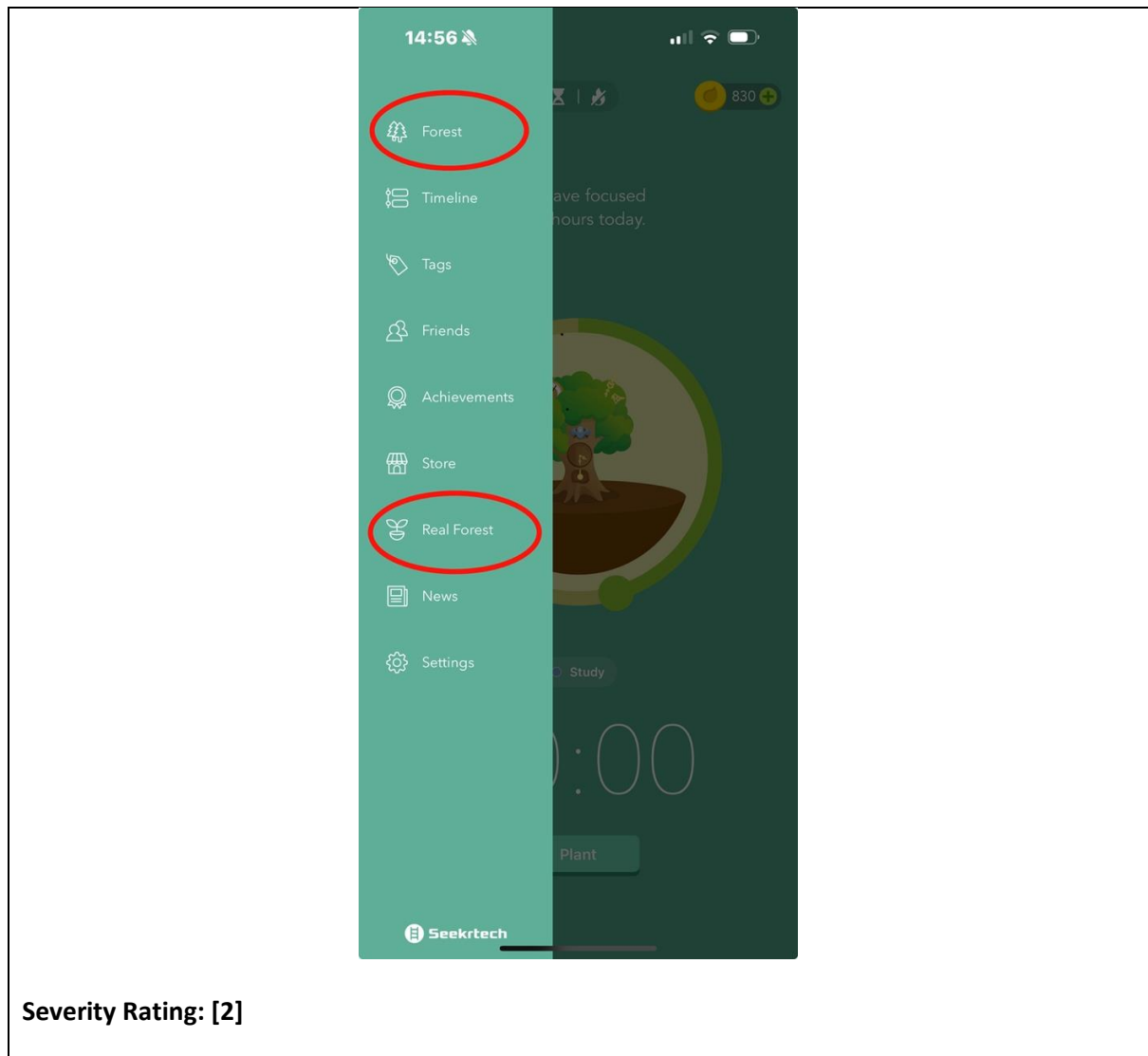


Severity Rating: [4]

Incident Log [2]

Incident Description:

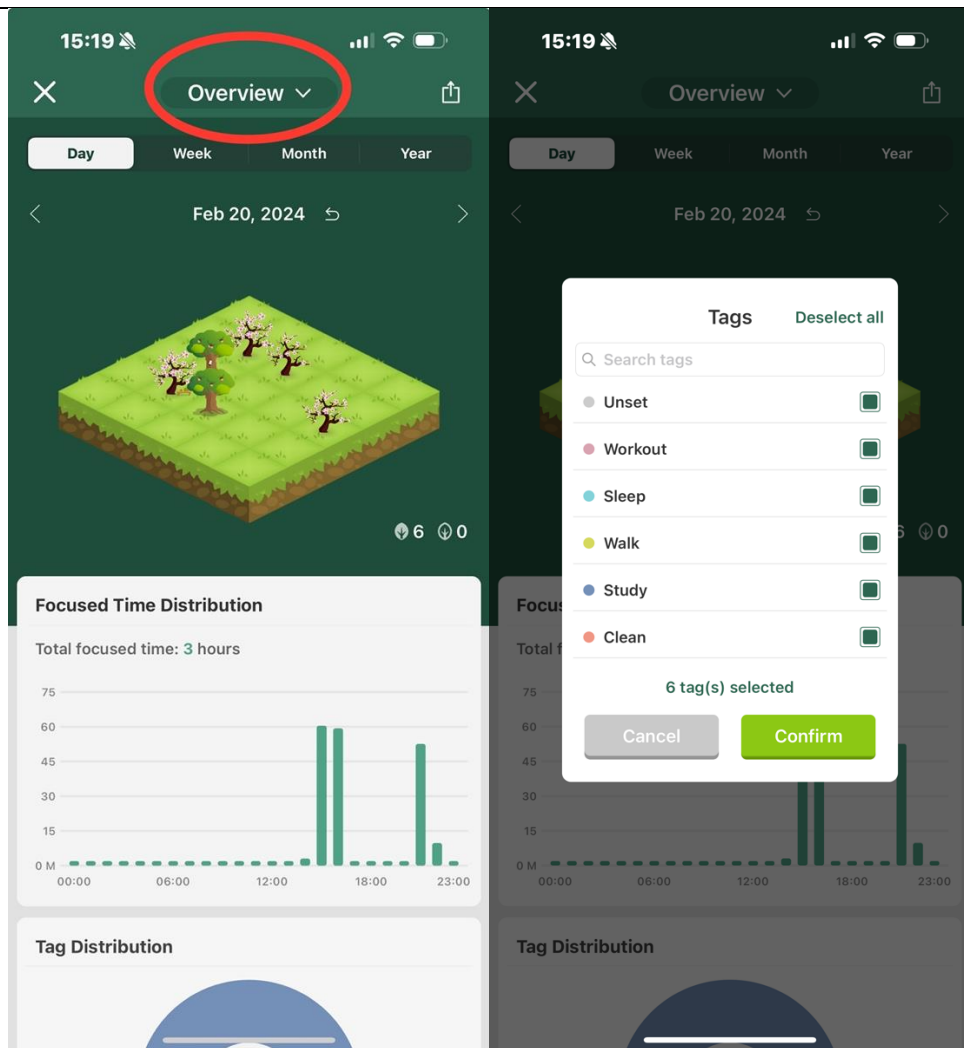
When performing Task 3, two of the users were confused whether the Forest or Real Forest should be chosen to open Forest overview. The names chosen are similar and confuses the users at first usage.



Incident Log [3]

Incident Description:

When performing Task 3, one of the users couldn't find how to filter using the Tags. The placement of the Tags is not quite noticeable.



Severity Rating: [2]