Effects of UI Design on a Chatbot Interface

Mariah Vadakekut

In the scope of this project, the user interface (UI) can be defined as the visual representation of the communication between a sender and receiver. UI can also be defined in a more general sense. According to a paper from the Association for Computing Machinery, "A user interface is an artifact, meaning that it has to be designed and built with a purpose, that connects a computational device and a human user…" [1]. In essence, UI is the visualization of elements that allow a user to interact with a program.

The goal of this project was to create a more aesthetically appealing UI design for a smoking cessation chatbot. The current design at that point of time was simple, and the goal was to make it usable enough for users to interact with the AI chatbot. However, as mentioned in "The Impact of Good UI Design", the way content is displayed affects how a user will interact with a program [2]. Additionally, the results of this UI redesign will be based on the Usability Heuristics described by the Interaction Design Foundation [3]. There are 10 heuristics given in total but only a few will be discussed for this project.

Significance:

There is a popular phrase that says, "you eat with your eyes first". This is especially true when it comes to the digital world. A user interface is what connects a software developer's work to the user in a way that the user can understand. It allows a user to interact with a program without needing to know the complexities of the code. In a way, a good UI is a type of abstraction that makes using online resources simpler. In this project, the design and implementation of the UI is vital in how the user would perceive the chatbot. Since the role of the chatbot is to provide advice and information for smoking cessation, it is imperative that the user is comfortable in their interactions. Additionally, the interface should be easy to use so that users can focus on utilizing the service rather than on figuring out how it is supposed to work.

The impact of a poorly planned UI design can make it difficult for a user to use the chatbot or even dissuade them from using it all together. If they don't like what they are looking at, it makes it harder for the user to interact with it. Especially in the case of a sensitive topic like smoking, the user should be comfortable enough to ask for help and be willing to accept advice.

Data sources:

The data used to decide the most effective method for the UI redesign was obtained through a study on the most popular social media interfaces. Usually, the most aesthetically pleasing applications are the ones that are most used; they are also the ones that people are most familiar with. The following popular social media applications were considered for the chatbot UI: Instagram, Facebook, Snapchat, WhatsApp, Discord, and ChatGPT. These were chosen based on their popularity when it comes to communicating between multiple parties, similar to how a user would interact with the chatbot.

Methods:

Multiple types of UI elements from the above-mentioned applications were compared to find the most effective design. After a thorough comparison, the elements that were found to be shared among most of these apps included the combination of the chat body and input box, the use of rounded corners, and the implementation of a select number of muted colors. Ultimately, Instagram was found to have the most credible user aesthetic, and as a result, was used as a reference for a majority of the chatbot UI design. The rounded corners and shadowing give a softer look to the UI and the simplicity of the colors, and few elements prevent a busy/cluttered look that would otherwise overwhelm a user.

The following heuristics were also considered: Visibility of System Status, Consistency and Standards, Error Prevention, Recognition Rather than Recall, and Aesthetic and Minimalist Design [3]. Visibility was addressed by indicating when the user was able to type a message. The placeholder text was bolded to show system readiness. When hovering over the submit button, a user's mouse icon will also change to show the submit availability. Consistency was achieved by following the standard set by a well-known social media UI, which in this case was Instagram. Error prevention was implemented by keeping the available actions simple and allowing users to undo their actions. This can be seen in the instances where users decide not to continue to the survey, and they are able to cancel the "Back to Survey" action. Finally, recognition and aesthetic were considered by following the Instagram UI design, which many users would be familiar with. As a result, even users who do not have experience with chatbots would be able to use the program.

Results:

The original UI design is effective but does not hold to the mentioned usability heuristics. As shown in figure 1, the various elements of the chatbot are broken up by hard lines and there is a lack of flow to the interface. There are also small details such as the chat body and input box not being aligned, and the top of the chat body is cut off.

The earlier mentioned changes resulted in a more streamlined user interface. By utilizing an interface design that is well-known, the chatbot will be more intuitive for first time users. As shown in figure 2, the combination of the input box and button allows for a simple and clean design. Additionally, a profile icon was added to create a more personalized feel when communicating with the AI smoking cessation counselor. Applying rounded corners and adding shadowing to the background of various elements also helps to create a more aesthetic display which enhances the overall user experience.

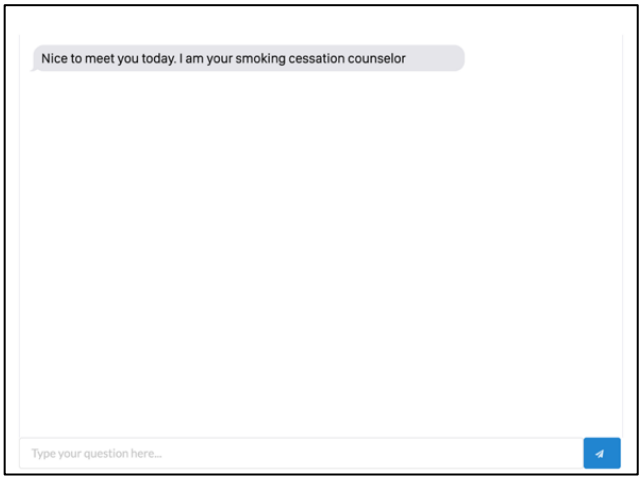

Figure 1. Desktop UI Before Redesign

Figure 2. Desktop UI After Redesign

Below are the results of the changes made to the mobile UI. These are in addition to the elements used in the desktop/laptop UI implementation. As seen in figure 3, the original mobile design does not fit the page and many of the elements are not aligned. Since a mobile interface requires a smaller surface, more care is taken to organize the different elements of the chatbot. As a result, a colored background and separation of the title was used to create a better distinction between the messages and the input box, along with adjustments to give proper size to all the elements.

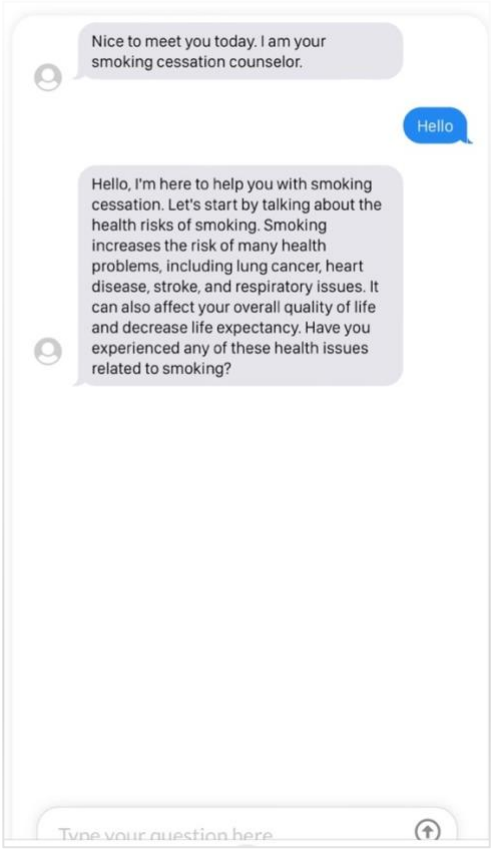

Figure 3. Mobile UI Before Redesign

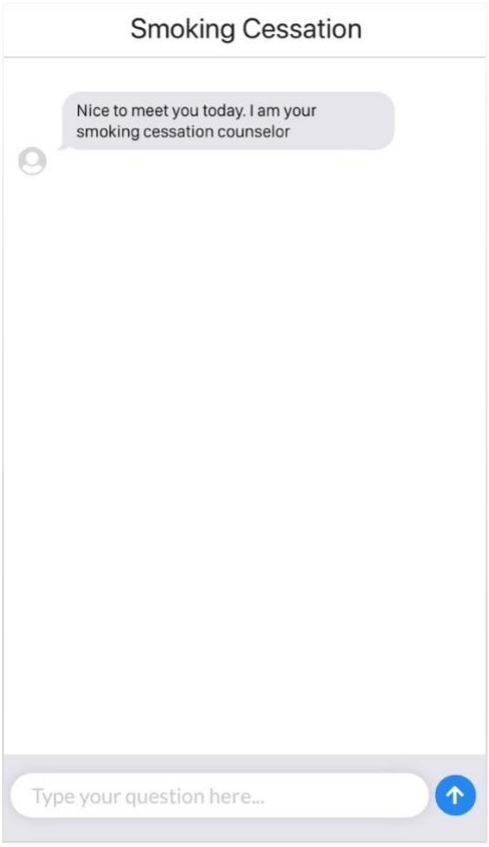

Figure 4. Mobile UI After Redesign

Future work:

Future development would mostly involve testing on various systems to confirm the design is consistent across different device platforms. For the desktop version, more testing will be implemented on laptops/desktops of varying window sizes. For the mobile version there will be further testing on different android and apple phones. In terms of continuing development, these designs could also be implemented on the other chatbot models involved in this smoking cessation project.

References

[1] Leonel Vinicio Morales Díaz. 2022. What is a User Interface, again? A Survey of Definitions of User Interface: Our shared and implicit understanding of the concept of User Interface. In Proceedings of the 9th Mexican International Conference on Human-Computer Interaction (MexIHC '22). Association for Computing Machinery, New York, NY, USA, Article 2, 1–7. https://doi.org/10.1145/3565494.3565504

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[3] Interaction Design Foundation - IxDF. “What is Heuristic Evaluation (HE)?” Interaction Design Foundation - IxDF. 24 Apr. 2024 https://www.interaction-design.org/literature/topics/heuristic-evaluation