SongWriter – Social Songwriting/Recording Application Human Centered Design Development Process

Tommy Turcovsky
Seattle, WA, USA
turcovsky.t@husky.neu.edu

ABSTRACT

Over the course of the Fall 2019 semester, I was a student in a Computer Human Interaction course at Northeastern University, Seattle. Through this time, I learned and put to practice Human Centered Interaction concepts through building a web application. Through doing this, thinking of the end user results in a much better product overall. First of all, all users no matter their ability should be able to interact with technology. Second of all, it is of utmost importance that the users are involved in stages of a design process. This promotes the happiness the user will have when the final product is launched.

INTRODUCTION

Music has changed and evolved tenfold over the years. It branches off as those become more creative and exploratory. Music has started from blues to rock to metal to hip hop and much more. With the evolution of music, the technology and songwriting process surrounding it has changed with it. Using concepts from Computer Human Interaction, I wanted to build a songwriting application that will be a part of that music evolution. I want to use what is possible from technology today to make an amazing new experience for all songwriters.

SONGWRITER APPLICATION PROPOSAL

I want to create a cloud version of a Digital Audio Workstation, often referred to as a DAW. In recording music in the modern age, most of the work is done with the use of a DAW. Think of an application like Garage Band, which is a DAW. They stack 'tracks' that include a recorded version of a song such as the guitar part, the vocal part with the lyrics, drums, etc. I want to make it possible for musicians, recording engineers, and music industry professionals to collaborate in the recording process, mixing process, and the songwriting process. They would be able to provide comments on things they liked or disliked on a track, be able to make collaborative edits on the project, and I would like for this to all be done in real time.

The in-real-time part is highly essential to promote a creative process. The best ideas happen in music when ideas are bounced off one another. I think this would be an essential tool in a musician's arsenal. There are many times when it is hard for musicians to meet physically in person. Many beginning musicians are working other jobs and this makes it hard to agree on times to meet. If they couldn't meet to record or collaborate, they would have to upload files and share files and it takes an extra step. This web application would eliminate that step and save lots of time and keep the creative process flowing.

In addition to these features, I want the application to be a part social media application. I want to give songwriters the ability to discover other musicians that write in similar genres. This allows musicians to build their networks and grow their ideas on a global scale. In addition to building their network. I want for songwriters on the app to have the ability to share their ideas and songs with their friend group or the world. This way the can increase their social media presence for feedback on their songs, connection to their audience, and for their music to be discovered.

FOUNDATIONAL RESEARCH

For SongWriter's foundational research, a songwriting musician currently working in the field was interviewed as a case study. The musician was interviewed to better understand what songwriters are doing for their process in the modern age. This individual's credibility lies in the number of years of experience they hold. Also, this individual is involved in many aspects of music industry. The interviewee is a guitarist, bassist, hip hop/rap producer, recording engineer, live sound engineer, and songwriter.

For the first question, I wanted to know how to people collaborate in the songwriting process. This individual uses a process called Skeleton beats. When working with a new artist he will send them about 50 or so beats and tell the artist to come back with about 10 that they really like and work through those tracks with the artist to develop the song together. He will ask why the artist likes the particular beat and work from there. They can take particular parts of the song whether it be the verse, chorus, or what have you and develop those individual sections, discuss lyrics, or change the arrangement.

I also asked how musicians share audio files. (These are most used in the collaboration process.) This individual responded by saying they use file sharing sites like Dropbox or Mega because the audio projects can be very large files. They have to export the file from their DAW, upload the files, then wait for the other to download the files and put them in their DAW.

Among other questions, I asked was how songwriters are currently finding others to collaborate with. Today, most songwriters find other like individuals on social media websites. They use them to display their songs and creative ideas to show what they have been working on. It is almost

like a resume for creative types. To work with others, the individual mentioned that they use Direct Messaging (DM) to reach out to others and for others to reach out to them. To find these artists to work with, they search via hashtags. Instagram is the most popular platform for creatives to display their work and discover others.

LOW-FIDELITY PROTOTYPE

I started the physical look and interaction of the application by creating a low-fidelity prototype. I modeled the design of the website to be a similar [1] mapping to that of Instagram. Mapping is referred as the layout of buttons that assist in interactivity. This, I hoped, would promote [1] discoverability. According to Norman, discoverability is the effectiveness a product has with informing the user on how to use an app without explicitly stating it. This would have the effect of increasing the ease of usability. I also included a DM button similar to Instagram representing a mail icon in the same spot. This will be familiar to musicians so they can connect with others. In relation to the navigation buttons, I thought the music note symbol on the bottom would be an excellent [1] signifier to relate to music projects or the DAW. A signifier according to Donald Norman's book is anything that can help identify the functionality of a product by just its look. The discoverability section to find others would be placed where the magnifying glass is on the app. Also included will be a "Story" section, similar to Instagram/Snapchat. This way the musicians will be able to post what they are working on that day and stay connected to their followers.

Figure 1. Low Fidelity Prototype Homepage. Notice navigation buttons on the bottom are similar to Instagram

I also used other applications for inspiration. The DAW part of the app was inspired by DAW's my interviewee had used in the past such as Logic, Pro Tools, and Garage Band. I had included a measure and beat monitor section, minute/second monitor, and tempo monitor/selection. To allow users to comment on certain parts of the track I added a section to the ruler to put comments on different parts of the track. My DAW also intends to use [1] constraints successfully. Constraints, according to Norman, are used to prevent the user from doing a task. When used effectively they can provide a better experience for the user. Continuing on, to record a track, one must record arm an individual track, then press record. This way the application will know what track the user wishes to record so they only record the track that they intend to.

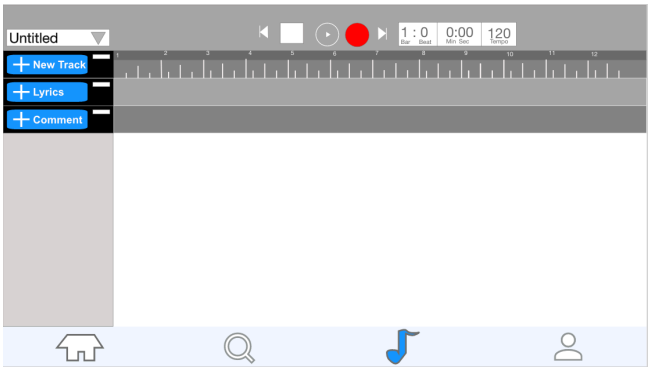

Figure 2. DAW of the application.

For a new user's first experience, I wanted to [1] design for error. Norman defines "designing for error" as the user will make mistakes. It is our responsibility to design for that, working with the user to provide a better experience for them. If the user would try to login, my [1] feedback mechanism would tell them the username and password would not be found. This makes it logical because they do not have an account yet. It would then redirect them to the sign-up process.

Figure 3. Design for Error: Invalid login

In the sign-up process they would be able to add collaborators based on their friends from other popular social media sites. It would use signifiers based on the logo of their respective sites of Facebook, Twitter, and Instagram.

Figure 4. Find Collaborator part of the sign-up process

The final part of the sign-up process involves adding genres that the musician writes for. I want the user to add hashtags for the genre's they write. This is similar to the way musicians discover others on Instagram. I would like to adopt that same policy for my SongWriter application. These genres would then be shown in their profile page under their follower count.

Figure 5. Genre Selection part of the process

On the profile page, the user would be able to edit their profile, see their username, follower count, and much more. I added a Project Highlight section so the SongWriter could display their best work. Also, I added a music player section where they could add their own music or other SongWriter's songs to their music player.

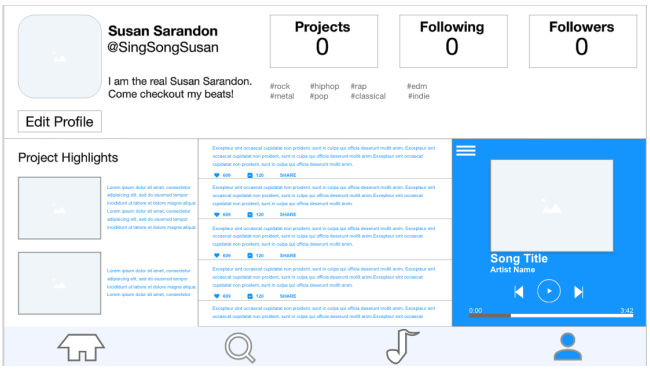

Figure 6. Profile Page

LOW-FIDELITY PROTOTYPE – USABILITY TESTS

To test the usability of my low-fidelity prototype, I had three case studies. These test different workflows a user would have when using SongWriter:

1. A new user wants to make an account and then see how they are being portrayed to the world
2. A user has a vocal melody playing in their head and wants to use SongWriter to record the audio to not forget it later
3. A user had made an amazing project and wants to share it on SongWriter. They want other users to be able to comment so the user can take constructive criticism.

I had 3 participants for the usability tests. They were all songwriters with various backgrounds; Participant A is a bassist, Participant B is a trombone player, and Participant C is a trumpet/guitar player.

For case study 1, the [1] design for error proved effective with Participant A and B as they both clicked login first. They were successfully redirected to the sign-up process. The genre selection did not work for all participants. They were all stuck on what to put for the genre section. The participants would have preferred if there were options to choose from to know what they needed to enter for this section. Other than that, all participants were successfully able to make to the profile section of the application. Participant A did mention he did not see a notification section to keep up to date with happenings on the app.

In case study 2, the music note [1] signifier worked wonders for all participants to navigate to the DAW section of the application. The constraints of recording arming a track worked perfectly. Participant A was looking for a section to select an input for the audio track. The individual said this was needed so they could select a microphone to use. Being musicians navigating and interacting with the DAW felt very familiar to them. I was thrilled to observe that.

The final case study, exposed flaws I did not anticipate when designing the app. The start of this case study began in the

DAW section. Participant B was looking for a share button within the DAW itself to share their project to their feed and was disappointed when there wasn't one. All participants were able to navigate to the homepage and fill in the information. All participants were successfully able to attach their project by clicking on the music note button on the creating post section. It has proved to be an excellent signifier for the application. Participants B and C skipped selecting view permissions. They needed to select "Allow Comments" but could not locate that section to change it.

Overall the usability tests went very well. They proved the design worked very well but had flaws that needed fixed. I would not have been able to notice the flaws without other users.

HIGH-FIDELITY PROTOTYPE

The first round of usability tests highly influenced the development of the high-fidelity prototype. A high-fidelity prototype is a working interactive prototype of the project done in code. The code for the project is done in a JavaScript framework called React. I chose to use React because it is an excellent framework to create single page applications. This is very similar to other social media sites like Instagram and Twitter. This was for a familiar experience for users and to provide a more seamless experience as well.

To explain the high-fidelity prototype. I would like to do it in relation to the case studies I performed on the low-fidelity prototype. The first study explored the scenario of a new user signing up for the application. Based on first round test feedback, participants were unhappy with the genre selection section. To accommodate for user needs, I added suggestions to the genre selection. The user can select from 0 to any music genres to say what they write for.

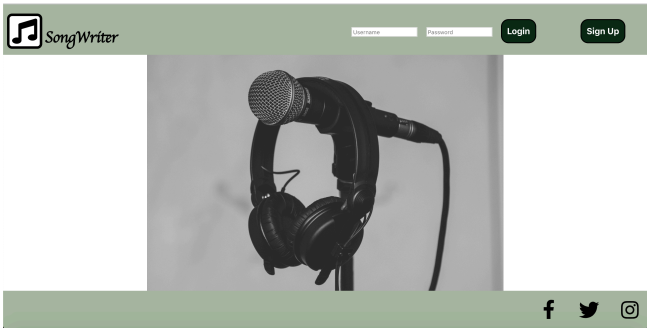

Figure 7. High-Fidelity New User Landing Page

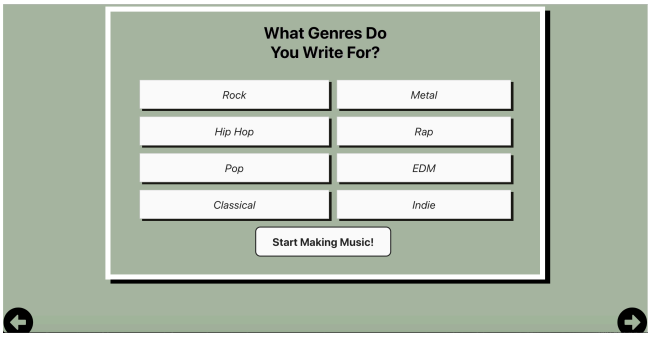

Figure 8. High-Fidelity Sign-up Process (Genre Selection Page)

I relate the previous problem to choosing flavors at an ice cream shop. If you have a shop with 99+ flavors, it will be much harder to choose one flavor for "fear of missing out." If just given a choice of chocolate or vanilla, it is much easier to select one flavor. When the genre selection was open-end, users paused and did not know what to pick.

Case Study 1, then led users to the home page. The home page was updated with a notification tab in the navigation bar on the bottom due to Participant A's feedback on the first round of usability tests. I believe this suggestion would benefit all future users of the application.

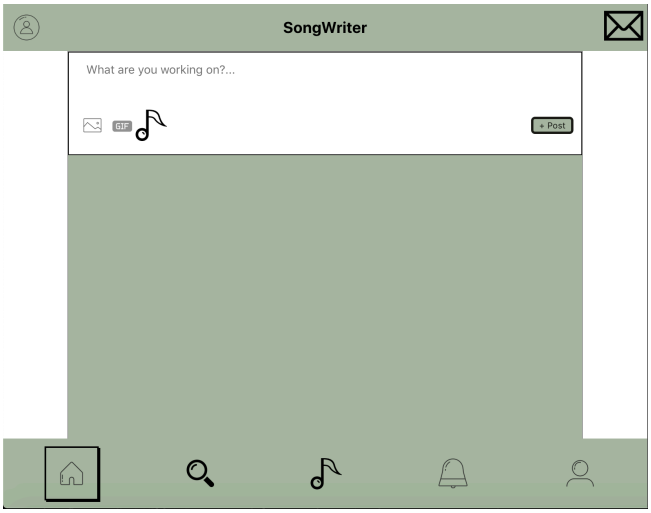

Figure 9. High-Fidelity Homepage

For the second case study, I want to add the request input section to the individual track. Now users have the ability to choose the audio input when it comes to creating an audio track. Most everything else was fine with this case study the first time around.

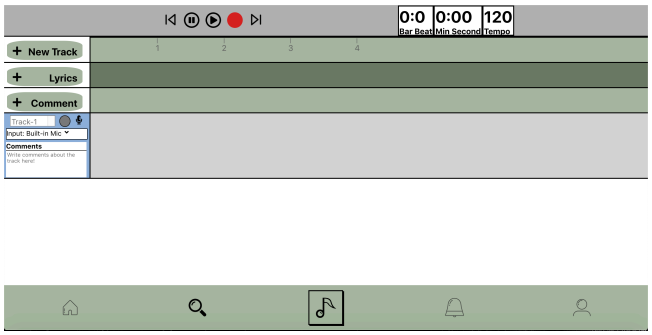

Figure 10. High-Fidelity DAW page

For the third and final case study, the view permissions were skipped over. In the high-fidelity prototype, I wanted to make the signifier bigger for users to see. I wanted a solution for users to discover the feature easier. I really enjoyed using the music note symbol to make a default album art for users' projects. Participant B from the first study wanted that feature. I'm hoping this default album art will be the first step in solving that solution.

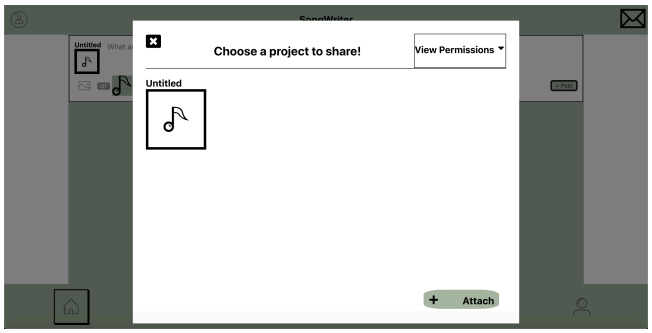

Figure 11. High-Fidelity Post – Project Selection

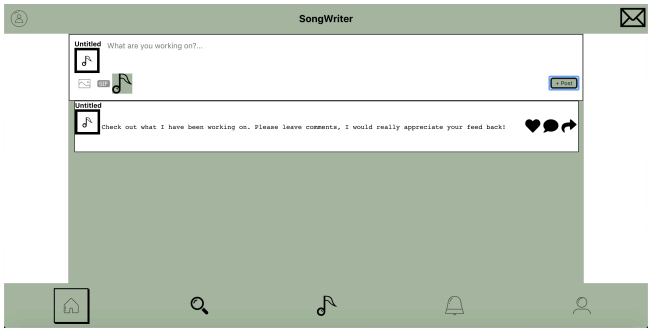

Figure 12. High-Fidelity Post – Posted to Feed

HIGH-FIDELITY PROTOTYPE – USABILITY TESTS

The process for the high-fidelity's prototype was the same as the first round of testing. I wanted to AB test to see the progress that listening to user feedback had on the design. I also wanted to see how well a coded web application I had made held up. I had 3 new different participants for this round of testing for a fresh set of eyes. We will call these individuals Participant D, E, and F for ease and confidentiality. Just like the low-fidelity usability testing participants, D, E, and F were all musicians. They included a hip hop producer, an acoustic guitar songwriter, and keyboard songwriter.

For the first case study, the options in the genre selection section worked well for everyone except Participant F. They were disappointed they did not have an option to add genres they wrote in that weren't on the genre selection button list. The additional 'next arrow' on the genre page served no purpose other than confusion to all participants. The rest of the workflow went smoothly for all participants.

The second case study proved there had to be much more abilities in the DAW. Participants D and E were looking for ways to save their project in the DAW. All participants thought the DAW looked pretty empty; meaning it almost looked fake to them. They were able to interact with the DAW successfully and complete the workflow but wished for more features in the DAW.

The final case study worked as expected. All participants were able to post the project they worked on to their feed. The "View Permissions" button was effective at its discoverability and understanding when selecting their project. One negative, the "+Post" button was small for all users and wished for it to be a better signifier.

FUTURE WORK

I hope to keep working on SongWriter as a passion project of mine. Music holds a very special place in my life. I love helping creators make anything that they can dream of. I believe SongWriter is the perfect application for me to work on.

As far as improving its usability for better Computer Human Interaction, I have multiple things I would like to work on. I would like to update the color scheme for the app. I want the app to pop more. I want to make the DAW much better. I want to add features to export work, save the project, share and post the project from within the DAW.

For other parts of the application, I would like to flesh out the "discover songwriters" section of the app. This way I can bring songwriters together much better than just adding friends they have on other social media sites.

If I were to do this project differently, I would start on a smaller scale. It was just me working on the project and given the scale of the project, it was difficult to do it all myself. I love the idea and have big plans for it, I just need to manage expectations better to judge what I can do in a given time frame.

CONCLUSION

Computer Human Interaction concepts are essential to creating a well-designed project. There are only so many things developers can think of when creating a product. Reaching out to target users promotes a better end result. This has been shown through multiple rounds of usability testing within my SongWriter project. Without user input, I would have missed some key features about my app. I also

gained knowledge on what could make my application better based on user needs.

ACKNOWLEDGMENTS

I wanted to thank Donald Norman for his book, *The Design of Everyday Things*. Norman provides a lot of knowledge about human centered design in an easily understood way. I would also like to thank Abigail Evans. She was able to get me off and running with using React when I was stuck. It was a very valuable skill to pick up. She was also amazing at responding to my emails quickly and going above and beyond with the information she had in her response.

REFERENCES

[1] Norman, Donald A. *The Design of Everyday Things*. Basic Books, 2013.