SENIOR CAPSTONE FALL PROGRESS REPORT

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SOFTWARE INNOVATION FOR DUAL SCREEN NOTEBOOK

OREGON STATE UNIVERSITY
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Abstract

Our group will be building an application whose main function is to provide an easy setup for users who may use the notebook for a variety of purposes, such as music production, coding/productivity, and gaming/streaming. To provide tools to music producers, we will provide integration with a DAW, which requires programmable keyboard shortcuts and the ability to read and create virtual MIDI connections. For coding and productivity, user tests will give us insight in areas that would benefit those types of users on top of programmable hotkeys and auto-placement of windows. The final use case, gaming/streaming, will be modeled on the UI of the Elgato Streamdeck, with the programmable buttons acting as quick access keys.

CONTENTS

I. Goals and Purpose

Starting out, our purpose in this project was to create an application that would give people a reason to considering buying a companion-screen notebook. Fast-forward ten weeks and that is still our primary goal, but now we know the applications that we will be creating, how we will go about creating them, etc. As of now, we would like our end-product to function, in a broad-sense, similar to the Elgato Streamdeck - where users have programmable buttons that they can do a variety of tasks with. Each member of the group will be tasked with implementing part of the functionality of this application, with some members taking specific use cases and others working on general quality of life aspects that will make the app more usable. This includes a programming use case where a user might want keys to be able to auto-place multiple windows and applications in a custom arrangement. A music production use case which will focus on integration with a DAW to let the user be more productive in music creation. Along with many small issues we will have to solve like returning focus to whichever application was currently taking focus before using this application and setting up UXs that are conductive to actual user productivity increases.

II. Current Progress

Now at the end of the term, we have accomplished identifying many of the problems we will run into when completing our project along with how we will move forward in implementing the solution, that is, our application. Throughout the term, we were able to narrow down the problems and potential solutions through the papers we wrote, namely the Problem Statement, the Requirements Document, the Tech Review, and the Design Document. All of these helped us move towards a solution, whether it be answering the question ”what exactly do we need to do” or figuring out what tools we’ll be using to solve this problem. This term was mainly used to set up the implementation of our application, whereas winter term will be where the majority of the implementation will happen. During the break, some members will also aim to learn C#, as C# may end up being used for our project.

III. Problems and Solutions

One of the major problems we first encountered was figuring out the direction we wanted to take the application. Having an open-ended project meant that we had to come up with different ideas and figure out whether or not they would be viable. Another problem was lacking the hardware to get a good sense of what we will be developing for. We were able to solve the first problem by meeting with our client and bouncing ideas back and forth. Eventually we were able to come to a solution that would allow everyone on the team to have an individual part, while also contributing to a bigger application that encapsulated all the member’s work. After deciding on the project, our client was able to loan us an Elgato Streamdeck so we could get a sense of how it works and the functionality it offers. He was also able to secure an Asus Zenbook Pro Duo so we can begin developing with a clear sense of the device that the software will be running on. Another challenge we ran into was how to implement accessibility into our application. We want as many people to be able to use our application as possible so we needed to factor in those who may have to interact with a laptop in a different way than usual. Our client was able to have a coworker join us during a meeting who has experience in developing for accessibility. Depending on the audience we want to develop for, we can add sound feedback to the buttons, or integrate the applications with a screen reader. This would open our application up to even more users and would help with inclusion.

IV. Interesting Pieces of Code

Although we have not developed any code for our project, in part to us not having access to the Asus Zenbook Pro Duo, there were a few motivational plugins found for the project that one of our group members found. It turns out that the Streamdeck can be programmed to play a game of its own, as its own plugin. Additional plugins found as potential applications to the Streamdeck include implementing a counter to detect how many times a certain key has been pressed and displaying the current time and changing the style of the clock.

V. Retrospective

	Positives	Deltas	Actions
1	This week get to vote on and apply to the projects that we want to work on for the year.	We need to look at the projects available and if want, apply to them directly, or vote for them in the survey.	We need to spend time looking at the projects available and whether or not they would be something we would be interested in committing to for the year.

2	This week we got assigned our groups for Capstone and the project that we will be working: Software Innovation for Dual Screen Notebook.	We have a vague idea of what our project is and need to talk to the client to know more.	We are waiting for the client to reach out about our first meeting.
3	This week we talked to our client for the first time. From this we learned about how our project was open ended and we had a lot of opportunity to take it in the direction that we as a group wanted to. Our client also provided us with some ideas that we could take and use for our project.	Our main task for this week was thinking up different use cases for the duel screen display that we could create.	To come up with these ideas we spent time thinking about what kind of features we would want during our normal uses cases so that we can come up with use cases that will be beneficial to actual users.
4	This week we met with our client and brainstormed ways to utilize the companion screen in order to boost user experience and increase their productivity. Some ideas thrown out were improving the Adobe feature and using the Elgato Streamdeck model.	We need to start working on the Requirements Document, which would be due towards the end of the week. Another problem was to eventually decide which idea we would pursue in the future.	For this we met with our client, and shared what we were thinking and he gave us some ideas of how we could utilize the companion screen. In this meeting we drifted towards the Elgato screen model.
5	This week we received an Elgato Stream Deck from the client that we could play around with to get a better feel for what we could model our system as.	Since the Tech Review Draft is due this week, we need to figure out what functionalities that we could implement, what modifications could be beneficial, and what these use cases would be. Additionally, we need to talk about how we want to divide this up between us.	We met as a team and generated ideas and then we presented them to the client who then gave us his feedback.
6	This week we met with our client and presented to him our individual Tech Review pieces and he was able to provide each of us feedback.	This week we need to have our Tech Review finalized and that means using the feedback we had gotten during the first draft and then revising it.	Since the Tech Review was an individual assignment based on our various components, there wasn't too much collaboration this week. All we ended up doing was completing the Tech Review.
7	In this weeks meeting, we gained a better idea of what the implementation side would look like as our client gave us some tools that we could utilize, for instance refocusing.	This week we have our Design Document Draft, which is basically a cumulative and tentative outline for what we would be doing for the rest of the term.	With this we are able to combine our individual portions of the Tech Review into one document to get more of a bigger picture of what next term would look like.
8	This week we got to hear about some more things to consider for our project during our client meeting. There was the Intel Accessibility Design Jam the previous week, so our client brought in someone to talk about some of the ideas and things to consider.	We also need to complete our Design Document this week and get it to our client for verification.	This means that we needed to meet both as a team and with our client to nail down the path that we would like to go down during implementation, write it up, talk to client, turn it in, and send it to the client.
9	This week we did very little as it was the week of Thanksgiving.	The next thing we have to do though is the Fall Term Final Progress Report.	We will finish up the Fall Term Final Progress Report and turn it in the end of week 10.

10	This week we received the Asus Zenbook Pro Duo Laptop that we are developing our applications for. With this we can now see and experience the companion screen to get a better idea of how our applications would work and functionalities we can build off of.	Moving forward into next term, we will start implementing the applications and functionalities that we have been talking about in the last 10 weeks and then testing to not only make sure it works with the companion screen but that it is having some sort of user experience and/or productivity improvement.	The laptop isn't necessarily set up but more so on the empty side, so some time would need to be taken installing software like Visual Studio.