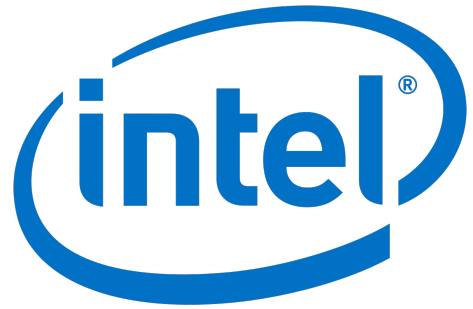




College of Engineering



FALL TERM CS CAPSTONE PROBLEM STATEMENT

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SOFTWARE APPLICATION FOR ASUS DUAL SCREEN NOTEBOOK

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Abstract

This capstone project has been proposed by Intel's Software Innovation Manager, Mike Premi, who has recruited nine members to develop and modify an existing application for the new dual-screen Asus ZenBook Pro Duo. This application is different from other standard programs in the sense that it is specifically created for the ZenBook's double screens. The main problem that needs to be solved is how the capstone team can properly create a UI based application that will incorporate all the features of a traditional program while also adding separate functionality for the second screen. The application to be built will be an overarching shell configuration program that will allow users to save and load custom layouts of various window handlers. Finally, the team will confirm the project meets the expected outcome by documenting requirements, creating a non-functional prototype, developing a C# based application and finally generating a technical overview document.

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1 DESCRIPTION

This project will involve working with Intel's Software Innovation Manager, Mike Premi, on developing a niche based application for the new Asus ZenBook Pro Duo. This unique laptop has two 4K screens instead of the traditional single screen display. The main display is a 15-inch 16:9 4K OLED screen. While the second display is a 32:9 IPS ScreenPad Plus screen directly above the keyboard. In other words, the ZenBook acts like a dual-screen monitor on a single machine. The ZenBook also has an eight-core Intel Core i9 processor with an Nvidia RTX 2060 GPU. This allows the laptop to be well suited for gaming, creativity, content creation and live streaming workloads.



Figure 1: Asus ZenBook Pro Duo Notebook.

However, since this particular laptop is a completely original design, not many applications have been created to fully utilize the two displays. Mike does mention that Asus has provided some applications for the second screen but these particular applications are very basic and don't provide too much versatility between the displays. That being said, without having dual-screen based applications, the demand for the laptop substantially decreases. The main problem for this project is how applications can be modified to incorporate its various UI features on the two screens.

2 SOLUTION

To combat this issue, our team will be focused on developing a shell-based program that will allow users to save and load layout configurations of various window handlers. For example, if a user loads a "gaming" configuration, the application would start the game on the main screen and discord on the companion screen. In addition, once the shell application is fully built, the developers will create secondary applications that will be supported by the shell. The currently proposed secondary applications include a task manager, D&D replica, extending Adobe's API and a chrome

extension modification. It has also been proposed that the team confirm that the application developed satisfies the objectives below to ensure the expected outcome is produced.

- The sponsor and team will mutually agree to a targeted usage that may or may not be suggested.
- The team will create a non-functional prototype for review and user testing.
- Incorporate Human Computer Interaction within the application.
- The team will deliver a functional application during the Engineering Showcase.
- Should be developed for Windows 10 using C#.
- Should follow the coding standards of Intel.

3 PERFORMANCE METRICS

In addition to the objectives listed above, the group and sponsor will decide when the project is considered complete. In order for the team to consider the project to be complete, it should follow three major steps. The first step is creating and verifying the requirements of the project. This will ensure that all team members are aware of the main goal and the various sub-tasks. After reviewing the requirements with any stakeholders or sponsors of the project, the team can proceed to step 2. Step 2 will entail the team developing a non-functional prototype for review and user testing. The prototype should also include a separate document detailing the various tests, comments from reviewers and any bugs reported from the tests. The final step of the project is to actually develop a fully functional C# program for the ZenBook. This program should fix all the bugs from the previous revision as well as improving the potential cost and speed issues from the prototype. Similar to the prototype, the final application will require a technical document outlining the various components of the project. In this document, the team should discuss the developmental process, how the program works, the technical features of the code-base, how it benefits the user experience of ZenBook user and finally how the application can improve in later revisions.