Description Document

[2IS70] App Development

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Problem statement

Have you ever, after a series of mouse clicks on your computer, wished for a better, faster way to start a program you need? Have you been in the situation where, after binge-watching your favourite show in bed, all you want to do is fall asleep, but instead you have to leave the comfort of your bed to shut down your laptop? Are you sometimes just too lazy to press the keys on your keyboard and wished for a shortcut? With this application you can do all of this, and much more, in a fast and effortless way, at the touch of a single button on your mobile device. Based on the idea behind Stream Deck, this app is the free alternative. Targeting multiple user groups, we aim to provide a mobile application which allows the users to remotely control their desktop programs using their phone through a paired connection, that should always be present when using the app. Which will make using their desktop faster and easier. The main user group, that could take advantage of this app is the average user. This user group might not need to use a lot of the functionality the app provides and can benefit from the default settings. Other user groups are those consisting of users with similar interests and shared demand for certain programs. Such a group could be gamer-users who might only need control over gaming programs, streamer-users who want all the streaming programs etc. Furthermore users shall be able to customize their profile settings to get the most of the app, for example by taking out functionality they don't need or adding a program they use on a daily basis but is not typical for their user group.

Explanation

The explanation below points out all needed requirements as given in section 3.1 and how our app is going to meet those requirements. Furthermore we will discuss a brief explanation of the application. This application allows you to control parts of the computer using your phone. It allows you to launch applications, run keyboard shortcuts or perform more complicated tasks. On your android app you will get some tiles which can be fully customized and you can add some tiles yourself. When you press that certain tile it will perform the corresponding actions, such as opening up a desktop application. There will be other features too, such as profiles that suits the right user groups with preset tiles for them.

Connectivity

The application will connect to a PC and stay connected for the entire time you use the mobile application. Also one button press, equals one or more actions on the PC. For example open youtube, pause the music or a keyboard shortcut to your choice (e.g. "ctrl + z"). As for the data manipulation we use a two way connection. For example if the user wants to make their own custom button for a program of their choice. The user will get a prompt message on the computer where the user can choose between two options, 1. The user can import the path from his/her PC or 2. He/she can manually add the path. This way we can read and write data. This also goes for the keyboard shortcuts. You again get a prompt message where you can choose a shortcut or make one yourself, by recording the keyboard. This information is sent back to the application in order to store the macro.

Similarly, our automatic profile switching feature will require information from the desktop. Profiles would have a list of associated desktop applications, and if one of those applications is selected, the app will automatically switch to a corresponding profile.

User Interface

The application will have a button-based UI, where the main screen consists of buttons that control certain aspects on your pc (such as start applications). Because the main screen that the user will use, only consists of a few relatively large buttons, it will be easy and clear to use for the more average user. If the users wish to create buttons of their own, they can simply fill in the blanks i.e. button name, picture, and for the actual function they can either select one of the existing functions that are in the app, or create a new function using the separate program on the PC (which was discussed earlier in the “explanation”). Which will once again result in an easily usable button. The settings page of our app will resemble the settings pages of other apps, which makes it easier to use since it is more familiar. There will also be a seperate program on PC to connect to the phone. This program will also have a simple look and easy to use UI. This PC program is just running in the background and makes sure that the android device is connected to the PC.

Hardware

The application will use the microphone of a device to use voice commands to for example “press” a button. There will also be an option, where you have to shake the device such that the connection between the pc and the device will be closed.

Screen sizes

The screen sizes of the application will be Android based and it will support any arbitrary screen size. It will also support portrait and landscape mode, such that the buttons will realign nicely.

Activities

The activities that the application will support are a Button viewer, settings menu, profile selector for different kind of layouts and preset buttons and there will also be a profile/button editor such that you can make it your own, to your likings. Using these profiles, you can also switch between different types of functions that you like. For example, you can use a streamer profile, which is more focused on activating the microphone of your pc and starting your streaming application. Another possible profile is a launcher profile, which you can use to start different applications on your pc. The application would range from programs like word and powerpoint to the IDE that you prefer, and it could even start certain sites (e.g. open up the homepage of the youtube). In the settings menu, you can change the tile size, the color scheme and the language. There is a connection button to connect the device to a pc.

Existence

We have found two applications that make use of an idea that is similar to what we came up with: Deckboard and Streamlabs. Both apps aim to help users to have an easier control of desktop programs from any mobile devices, where Deckboard seems to focus on the macro creation and Streamlabs is dedicated for the OBS streaming service from the user's phone.

Even though there are similar apps available to us already, we found that our product would still be valuable due to following reasons:

1. Our application is free. It can possibly extend its features as much as the pro version of existing apps can do with no expense.
2. It has many useful features that are in favour of customization. These includes: advanced macro creation, profiles creation, automatic profile switching, multiple languages and customizable colour scheme and tile size. Some of these features are found exclusively in our application. This gives our users more freedom regarding their usage of the app. We also plan to provide a number of preset buttons that are grouped together with respect to their uses. For example surfing preset contains internet and social media buttons and gaming preset is equipped with some game buttons.
3. It also has some features that let users to interact with their hardware. For example users can select an application by using the voice detection feature and disconnect their phone from the desktop by shaking, which can be programmed by applying the motion sensor. This is also a factor that makes a difference with the existing apps as they do not make use of it.

Existing code

As we are creating an android app, we will obviously make use of the android framework and several of their features. These will include; voice recognition, motion sensing and bluetooth capabilities. In order to establish a bluetooth connection between the phone and computer, we will also have to create a receiver computer program with bluetooth capabilities. This will likely be written in java as well, using a bluetooth library. In order to actually execute things on the computer, like moving the mouse, the built-in robot package will be used.

The desktop application will also make use of the built-in swing package for java. This will allow us to create some simple interfaces that supplement the customisation interfaces provided by the app. This will include a file browser to easily select what file to run for a specific macro as well as an interface to easily input certain key sequences and combinations.

We will also attempt to allow connection over local wifi without an intermediate server, for which one of our group members has already written some code in the past. This code was more of a test however, and will need to be modified.

Feasibility

We think that our project is feasible time wise, since we have only a few core functionalities (i.e. connecting the phone to the computer and making the buttons). One of our team members already has some experience with making apps and connecting their phone to a pc, so this gives us a base that we can work from. And once we have created one of the buttons that we are going to use, we can reuse the same set-up from that button for the other buttons. So as soon as we have one button, we will be able to code most of the other buttons quite quickly.

Experience wise, we only have one person that has any experience with making android apps, but all members have experience with programming in java. And everybody that has no experience with making android apps seemed willing and excited to learn about it. Five of our members are second year Computer Science students and one member is a third year Web Science student. So we have a broad base knowledge of making java programs, especially in a modular way. The Web Science student adds great value to our group by having more knowledge with user oriented programming (e.g. how to make the interface and interaction more appealing). This means that we (will) have the knowledge and capabilities to make this app.

Macro tile application mock-up