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CSC 415

New Individual Project Proposal & SixthSense Spec

On the surface, smartphones do not seem very accessible to the visually impaired. A lot of information that comes from phones are ironically not audible, despite what a “phone” is actually supposed to do. While smartphones have made strides towards making phones more accessible by using audio cues to identify information that the phone is displaying, I feel that this functionality doesn’t do enough for the visually impaired.

Another problem with audible cues is that well...they are audible. Listening to notifications may not always be possible, perhaps the user is in a loud place or doesn’t want to play the audio in public places whether to be considerate or to keep their information private from prying ears. The concept of SixthSense is to provide another layer of accessibility to apps and notifications for the visually impaired. A functionality that is fairly overlooked in smartphones is the vibration feature. All smartphones can vibrate, or at least they should. We normally use it to identify that a notification has come in without playing audio, but what if vibrations were more than monotone buzzing?

SixthSense aims to allow users to record their own personal vibration patterns. These different patterns will then have the ability to be applied to a number of notifications that a phone can receive. This means that users will be able to record and apply meaningful vibrations to certain notifications.

To develop this application, I plan on writing this application in Java using Android Studio. Potential data structures that I may implement include an arrays and vectors to hold certain information such as vibration patterns and their names. The primary algorithm I will be developing will be a notification listener that will be able to detect notifications, analyze their data and play the appropriate vibration pattern. I will need to reinforce my Java skills as well as learn new Java libraries that are unique to the Android platform. Most importantly I need to study methods for using vibration hardware, storing files locally, notification processing and background process handling.

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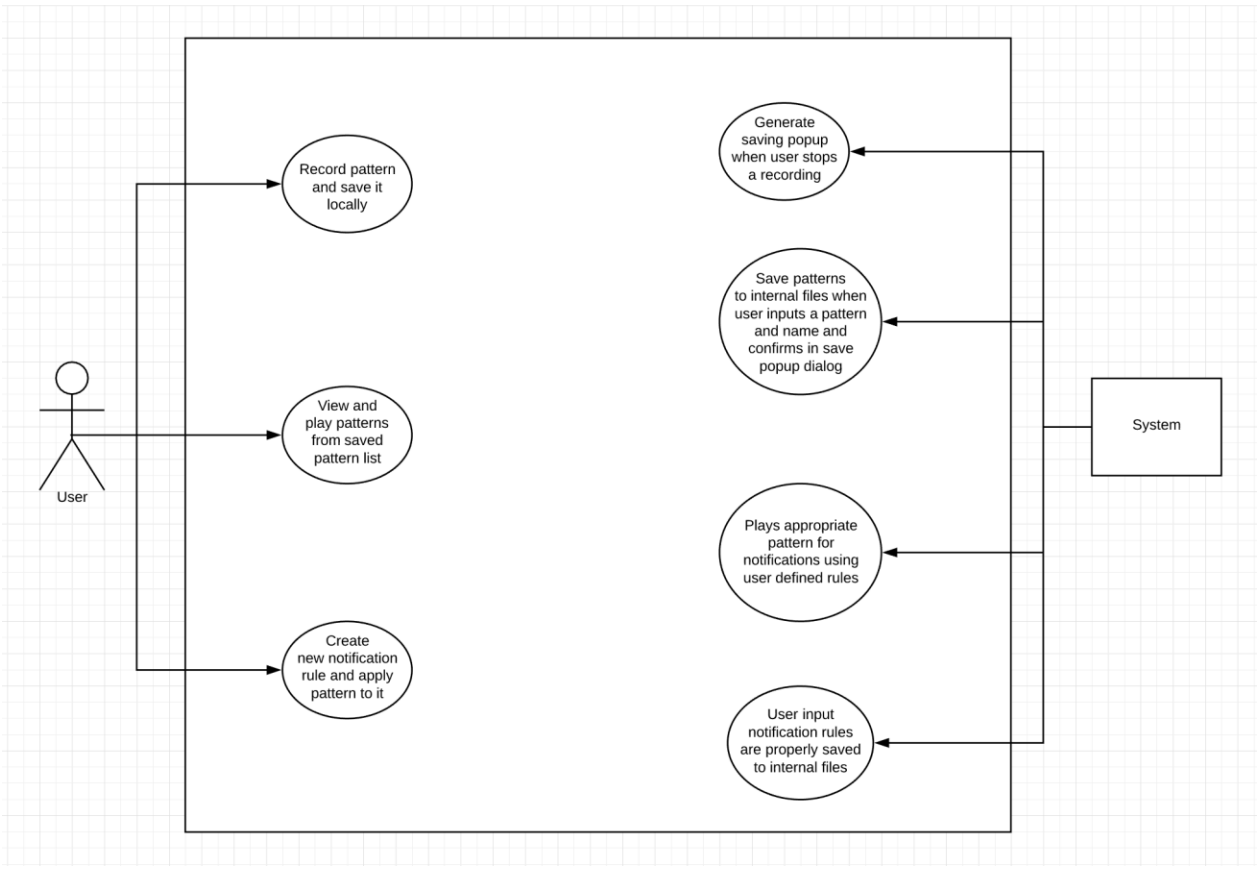
Use Case Diagram:


Record pattern and save it locally
View and play patterns from saved pattern list
Create new notification rule and apply pattern to it
User
Generate saving popup when user stops a recording
Save patterns to internal files when user inputs a pattern and name and confirms in save popup dialog
Plays appropriate pattern for notifications using user defined rules
User input notification rules are properly saved to internal files
System