PodCuts

FINAL REPORT
ECE 1778

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Submitted To:

Prof. Jonathan Rose
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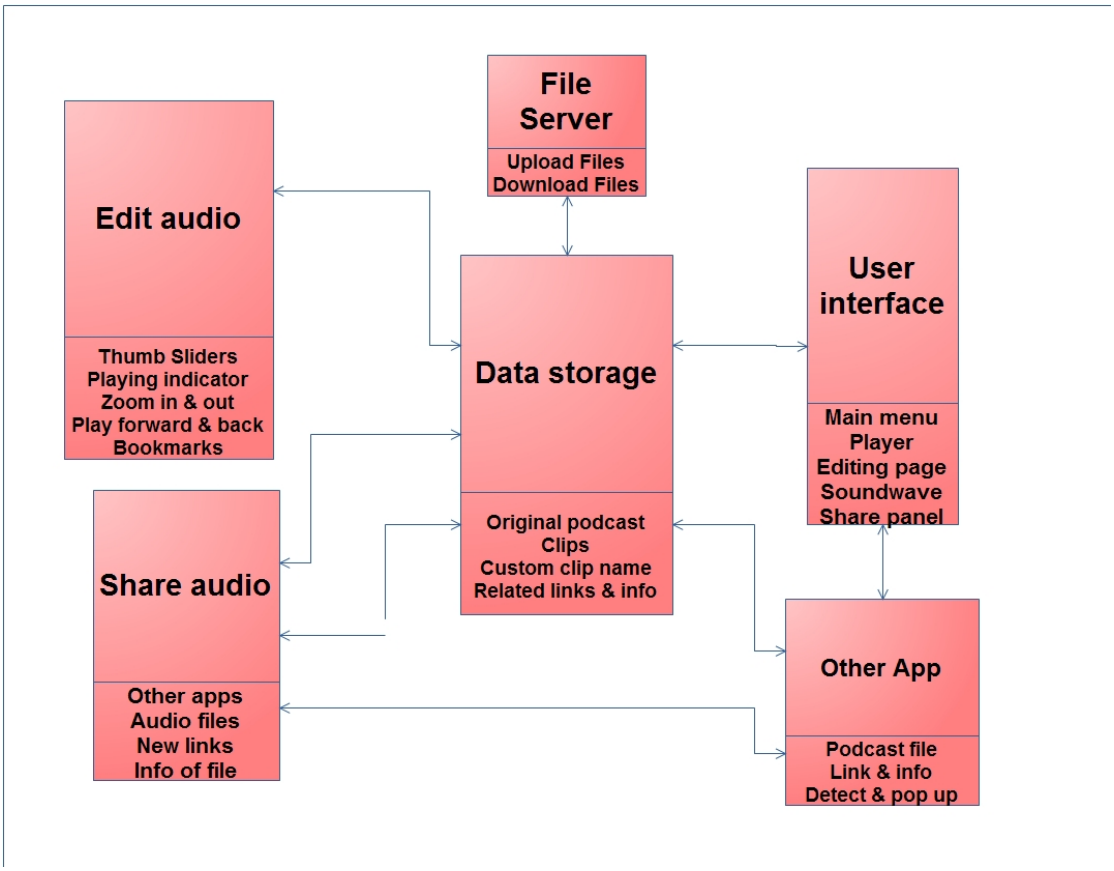
1. PodCuts - An Overview (With Specialist Context)

As a producer of radio and podcasts, I am constantly looking for new ways for listeners to interact with and share the content I create. And as a listener – an engaged one – I am constantly thinking about: What could make this experience better? It was out of this dual expertise that the idea for PodCuts was born.

PodCuts allows podcast listeners to quickly and easily edit and share - via email and social media - clips of the podcast they are listening to. The number of podcasts and podcast devotees is exploding, but listeners still have limited tools to engage with audio. Most podcast player/management apps allow listeners to share an entire podcast episode, but that is typically 30 minutes or longer. Listeners cannot share the segments or sounbites that resonate with them. And we know, from the limited research that has been done on audio "virality," that shorter segments travel farther and faster online. PodCuts takes all of that into account. If a listener hears something she wants to share, all she has to do is add a bookmark as she's listening - then come back to it later to edit the clip she wants, and immediately share it. It's a fun, helpful tool for listeners - and a boon to podcast creators/distributors, too, because it's a new way for their shows to gain more exposure and build new audience.

2. Overall Design



Our app can be divided into 6 main parts, all connected to the Data Storage part. This part is in charge of storing files, including the original podcasts downloaded and edited clips.

The Edit and Share Audio parts represent our app's core functions. The Edit function allows users to bookmark the podcasts they are listening to and to cut clips. It contains moveable thumb sliders to define the portion of audio to be "clipped." And it has a sound-wave display so listeners can visualize the audio file they are editing, and see where there are pauses, which helps when trying to

isolate a soundbite. Listeners can also zoom in/expand the sound-wave display using touch-screen technology – for better editing precision. The Edit function also contains a playback feature so listeners can listen to the clip they have isolated before cutting it.

Once cut, clips are stored in the app and also uploaded to the file server. The Share Audio part allows sharing of clips via other apps in the form of mp3's or links. Both forms of clip sharing are accompanied by the name and episode number of the podcast, as well as a link to the full podcast episode.

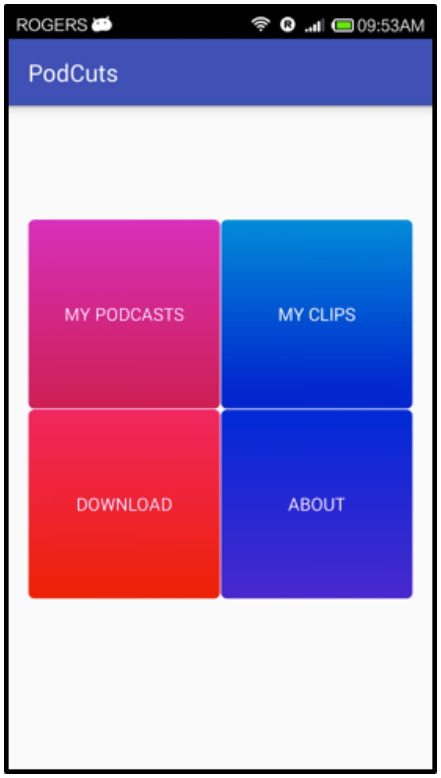
The sharing function connects with the "Other App" part - which links with the apps (Gmail, Facebook, Twitter, etc) used to share clips. The File Server part is used to upload and download audio files to/from the app. Finally, the "User Interface" part controls what the user sees as she navigates through the app.

3. Statement of Functionality & Screen Shots from App

3A. WHAT WORKED:

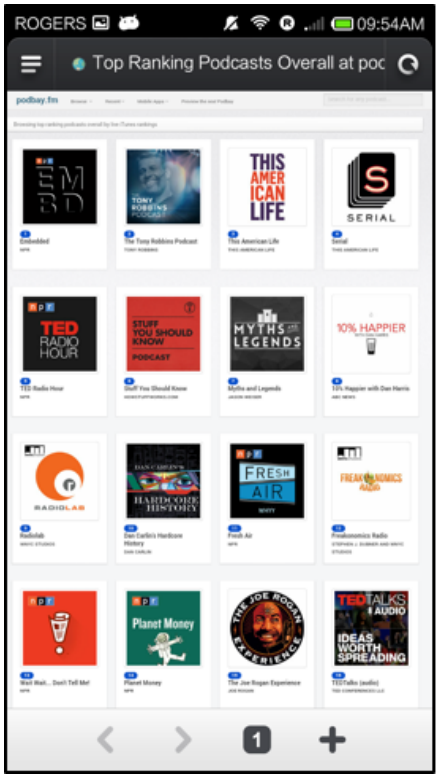
When you click our app icon, an introduction page splashes onto the screen for 1 second:

Then you are immediately taken to the main menu page, which gives you four simple destinations to navigate to:

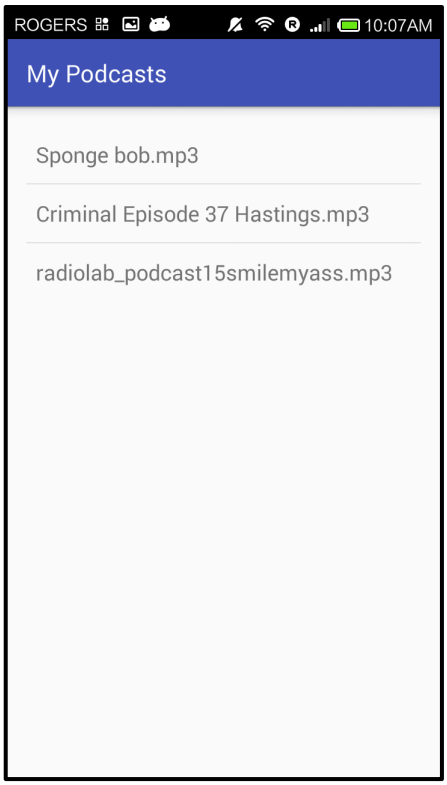


If you click on the “About” button, you get a quick synopsis of the app:

If you click on the “Download” button, you are taken to a page where you can browse and download podcast episodes to your device:

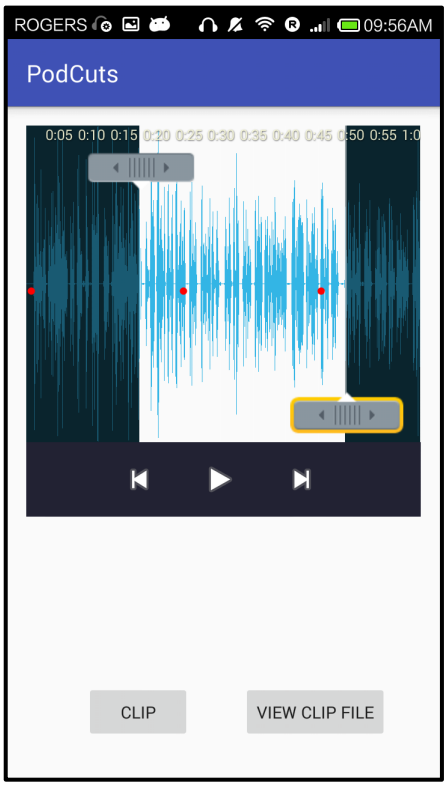


Once you have downloaded a podcast, you can find it on the “My Podcasts” page, also navigable to from the main page:



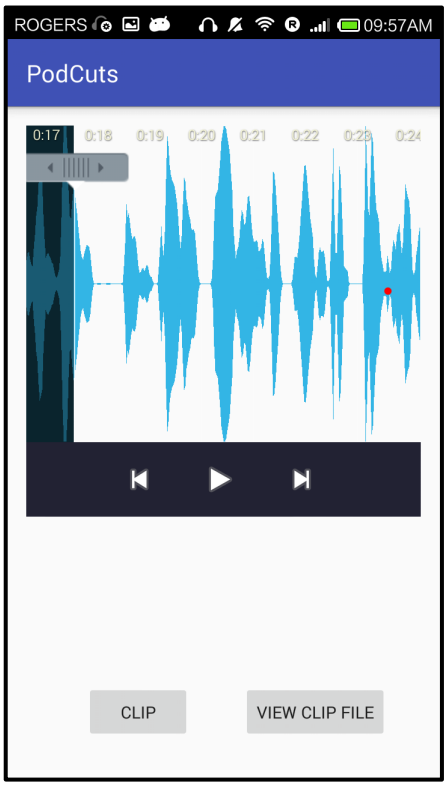
When you click on a podcast, you are immediately taken to the player page, where you can listen to it. You can play, pause, stop, as well as skip ahead by dragging the “seekbar.” You can also adjust the volume. If you hear something you’d like to clip later, you can bookmark that spot by using the “add bookmark” button. You can add as many bookmarks as you want:

When you are ready to edit a clip, you just need to hit the “check bookmark” button, and you are taken to the editing page:

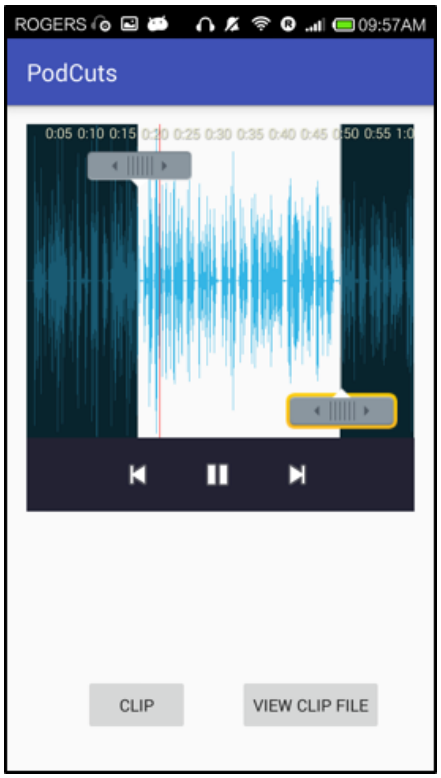


The editing page has a sound-wave display so you can “visualize” the audio, and see the portion of it you want to clip. The bookmarks you created show up in red so you can see “where” you wanted to edit a clip and home in on that area quickly. The area to be clipped is highlighted in white, between

two thumb sliders that can be manipulated easily to isolate the portion of audio you want. To help with precision, you can also expand the sound-wave display, using touch-screen technology to zoom in on the waves and the pauses between them to get a better sense of where to start/end a clip:



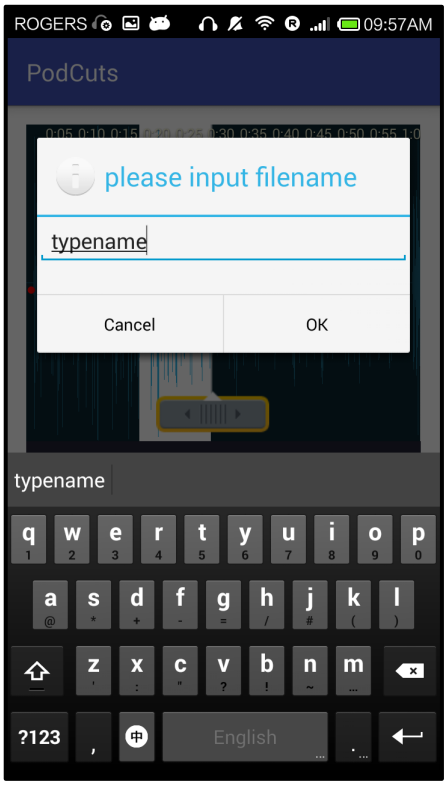
You can also “zoom” back out:



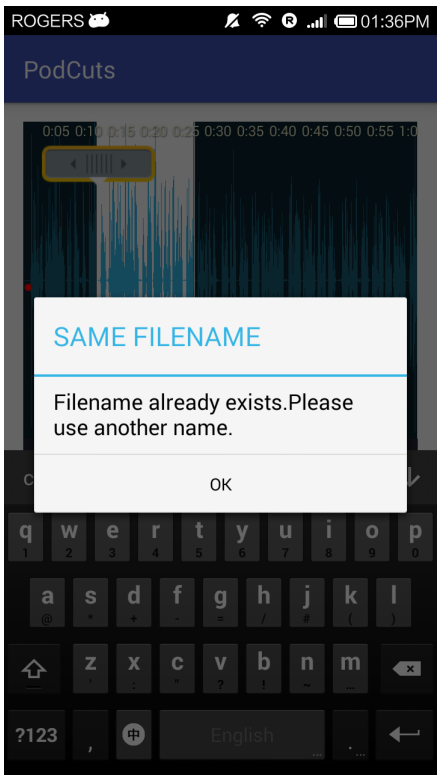
To make sure you have isolated the exact clip you want, you can press “play” – and the defined audio between the thumb sliders will play back. The moving red line indicates where you are in the

audio. If you want to skip ahead in the clip, you can click the forward button, which will take you to 5 seconds later in the highlighted audio. The “back” button will take you to 5 seconds earlier within the highlighted audio.

When you have the clip you want, just press “Clip” and you will be prompted to name your clip:

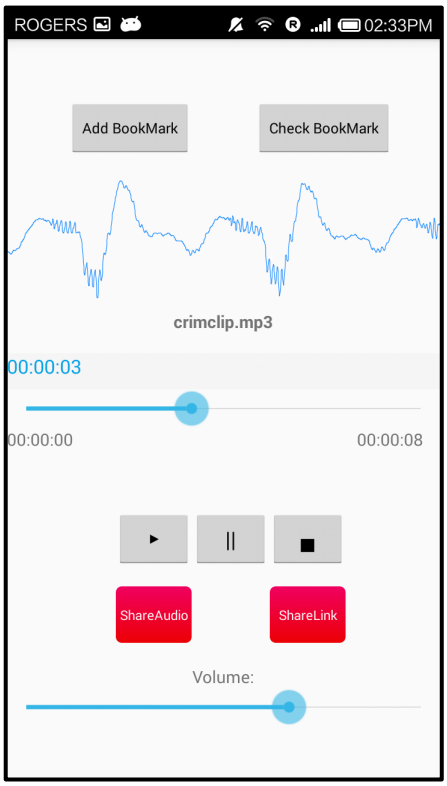


If you choose a name that has already been used, you will get an error:

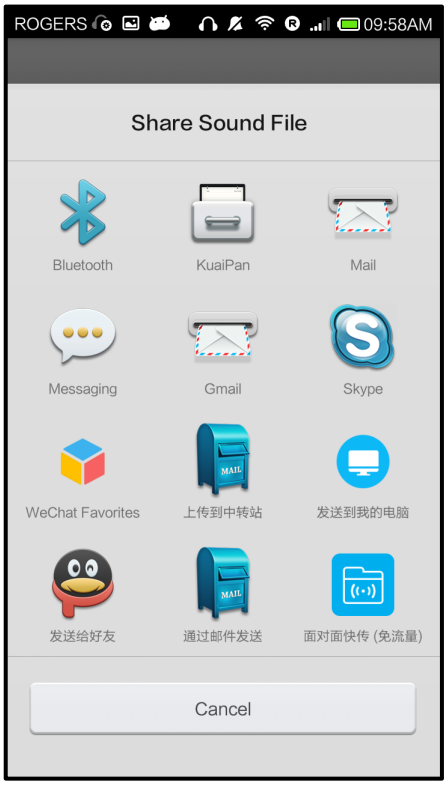


Once named, your clip will automatically be saved to the “My Clips” page, which you can get to by hitting the “View my clips” button, or through the Main Menu page:

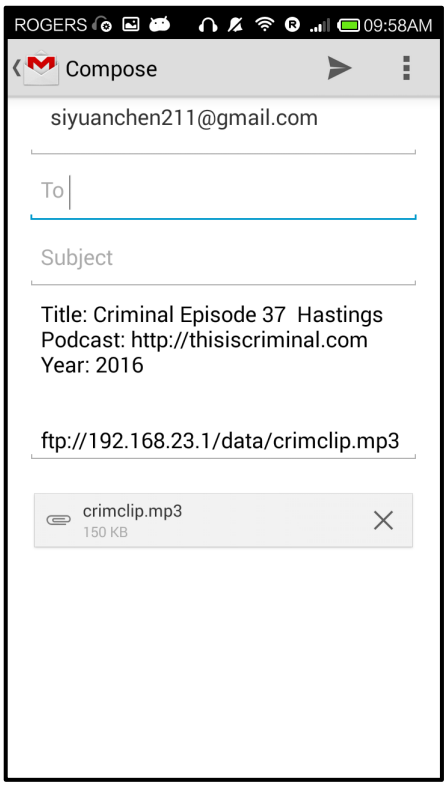
If you click on a clip, it will come up on the player page, where you can listen to it again – and share it. There are two options for sharing, indicated by the two red buttons – “Share Audio” and “Share Link.”



If you click the “Share Audio” button, you will send your clip in mp3 form, and have several options for sharing it:

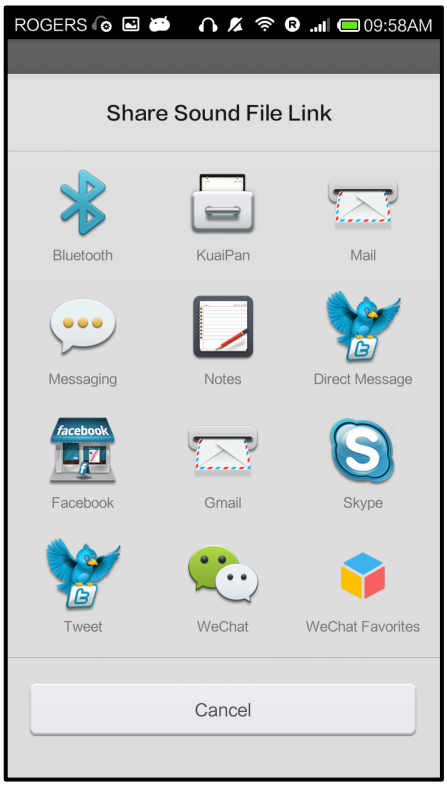


If I send my clip in Gmail, it will appear as an attachment in the body of the email. A link of the clip will also be included, as well as information about the clip – what podcast and episode it is from, and a link to where the recipient can download and listen to the full podcast:

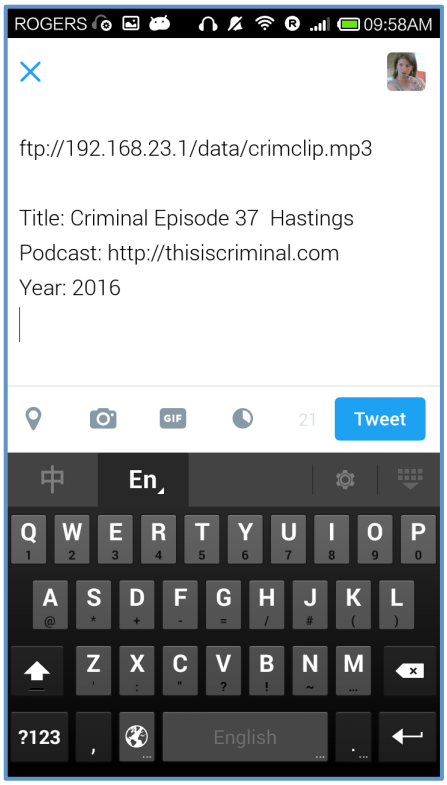


If you instead choose to share a link of the audio, you also will be presented with a number of

options for how to share your clip, including Facebook and Twitter:



If I click on the Twitter icon, I can tweet out a link to the clip – accompanied by information about the clip. Note that it is an FTP link for the clip, so if the recipient is connected to our server wifi, they can download it:



3B. WHAT DID NOT WORK

- Our app can't clip certain mp3's that lack some information like the sound track. We see no way to fix that issue.
- Right now, our app can't load podcast-length audio files because at 30+ minutes, they are too large. They crash our app, prompting the "out of memory" error. The reason is that we only allocated about 8MB of heap memory for loading audios files. The maximum heap memory is set in the phone and can't be changed. But we could solve the issue with a phone with a larger heap memory.
- When sharing audio links via Facebook and Twitter, these links will appear on the social media feed, but don't work. We use our laptop as an FTP file server, thus our links are FTP links. Facebook changes our FTP links to Http links - and invalidates them. Twitter displays the FTP link, but you can't click on it to get the audio. We think the only way to solve this is to buy or rent a domain name and IP address. This way, we could change our links from FTP links to https links - which would work on Facebook and Twitter.
- If someone using our app doesn't connect with the wifi created by our laptop, the app will spend some time to connect to a wrong IP address. The app's upload and download services also will be disabled because those functions are through our local server connected to our wifi. And without use of the server, users of the app won't be able to share audio links that work. The solution is same as above: we need to get a real IP address and domain name.

4. Key Learnings

We worked well together as a group, communicating clearly and dividing tasks well. After our initial proposal was deemed too far-reaching, we also very quickly homed in on a more doable plan driven by our app's core functions of editing and sharing clips.

Because the computer programmers don't listen to podcasts, it was sometimes difficult for the specialist to explain why certain features were desirable - or unnecessary. In retrospect, she would have had the programmers listen to podcasts for a week - on their commute and in between classes - to better understand the "podcast experience." The programmers, for their part, would have abandoned much faster some features deemed problematic (such as the initially proposed idea to record and edit all forms of audio playing on a device)

We would all would have placed a higher priority on enabling the import of a full-length podcast episode. Right now, anything longer than ~10 minutes will crash the app. It's fixable, but because the point of the app is to allow listeners to edit clips from podcasts - they should be able to listen to a full episode of a podcast!

5. Contribution of Group Members

Jen Moroz:
As the specialist, Jen was the primary QA person, directing the design (from a non-programmer standpoint) of features, and testing them from the perspective of a podcast listener and creator. Our group typically met twice weekly - to go over progress and test features, to put together presentations and decide what to work toward for the following spiral. Jen tested the app at those meetings, and in the latter part of the semester, had the app loaded onto a loaner android phone so she could use it throughout the week. Jen also was responsible for putting together the group's

Powerpoint Presentations, developing mockups that went into those presentations and compiling/editing the group's reports, with the programmers' input.

Sida Zhang:
Sida helped verify the feasibility of some features (for example, he determined early on that we would be unable to record all sound from the phone via an internal mic, as initially proposed). In terms of coding, Sida was responsible for much of the Player and Edit functions and part of the Share function. On the Player page, he executed the play, pause and stop functions and created the dynamic sound-wave display and the bookmark function. He also developed many features on the edit page: the sound wave display of audio files; appearance of bookmarks; moving thumb sliders to define audio to be clipped; zoom in and zoom out functions; and finally, the clipping function. This part included many steps such as creating ID3V1 and ID3V2 to produce a new mp3 file. Sida also set up the FTP file server and realized the upload and download functions. He also wrote the function of sharing links with other apps. Sida also drew the block diagrams for our reports and presentations.

Siyuan Chen:
For earlier spirals, Siyuan created the bookmark function and contributed to the simple editing system, which allowed users to clip between bookmarks. She also helped develop the advanced editing system, specifically: creating the red "play" bar and the play/pause, "skip forward" and "skip back" functions during playback of the defined audio. She also was responsible for extracting the time code from the thumb sliders to create the clip. She also created the "loading" function to let users know how much longer they have before getting to the editing page. She also created the file folders management system. For the sharing function, Siyuan enabled the sharing of text and audio at the same time, and linked to other apps users can share their clips with. She labeled clips by extracting information from MP3 files and attaching it to the clip. She developed the download function via embedded web browser, enabling the downloading of podcasts. And she took charge of UI design. Both she and Sida took part in testing and fixing bugs.

6. App's Contribution to Specialist's Field

Everyone thought radio would die before "Serial" came along and revolutionized podcasts - proving there was a way forward for "talk radio" (ie, not music) online. But because that happened recently, not much research has been done into the "virality" of audio - what makes it travel/be shared/start conversations online. And everyone wants answers. Last year at The Current, we did a pilot project whereby we edited short "grabby" clips of our show and released them on social media via SoundCloud - to see how many listens they got compared to the full show/podcast (one minute compared to 30+ minutes). As predicted, the shorter segments got more listens (this is a general rule online; the shorter something is, the more uptake it will get). But the "teaser" segments *also* prompted listeners to tune into the full segment it was pulled from. I see PodCuts as going a long way toward helping us better understand how and why audio travels online - and how much of a role letting listeners choose their own clips plays.

7. Future Work

There are a few features we would like to improve, starting with the editing interface. Right now, the left thumb slider - when moved - also moves the right thumb slider and shifts the defined portion of audio between them. We would fix this so that the left thumb slider moves independently of the right. We would also fix the audio link problem on Facebook and Twitter, improve the user interface and navigation.

We would also obviously want to ensure our app could handle importing a full-length podcast episode without crashing. Ideally, we would incorporate a podcast feed/player to make this a "one-stop" app for the podcast listener. Right now, you have to download a podcast on our app in order to play it and cut a clip from it. But most podcast listeners already enjoy the convenience of having their podcasts delivered to them in a constant feed, which they subscribe to and is updated regularly.

We would also enable "remote bookmarking" (via voice recognition, clapping or snapping) for podcast listeners who are driving or running etc – making it inconvenient/unsafe to touch the screen to bookmark podcasts. Finally, we would develop the app for iOs, as most podcast listeners use iPhones.

******NOTE: WE ARE OK WITH OUR PRESENTATION BEING POSTED ONLINE, BUT NOT OUR CODE *******