

<Twitter Voice> RASHMI RAMAN & ELI PINCUS

Domain

The system is primarily designed as an interactive news feed system using Twitter as the medium with audio input and output. The system is meant to be used on devices where users can access Twitter and read news articles online.

There is an excess of news information online and Twitter is one of the more popular media used for sharing and talking about the news. However, reading Tweets, clicking on the link to those tweets, composing Tweets in reaction to reading the story can not only be time consuming but also difficult if the user is driving or is visually impaired.

This system will read out a Twitter user's news feed to him and/or read out the introduction of the news article linked to by a tweet that is read. The system will allow options for the user to retweet a particular tweet, favorite a tweet, or even publish a response to the tweet from a fixed set of templates.

The user can also request a reading of the currently trending topics list in Twitter. The input data for this system is the Twitter news feed in JSON format which is retrieved when the Twitter API is invoked with the user's twitter handle as a parameter. The system will filter the Twitter news feed so that tweets pertaining to news stories (with links) will be read out to the user.

Interactions with Twitter Voice

Main Menu

After an initial greeting message and a system prompt providing the user with options for interactions, the user can issue any of the following commands :

1. Give me my Twitter Voice list : The system will retrieve the custom, curated Twitter Voice list for this user and read out the members to the user
2. I want my news feed : The system will read out the latest tweet among those published by the members of the Twitter Voice list
3. Give me tweets by <tweetID> (here <tweetID> belongs to the Twitter Voice list (Paul Krugman, The New York Times, Huffington Post, Suze Orman, Nicholas Kirstoff, Wolf Blitzer) : The system will read out the latest tweet among those published by the members of the Twitter Voice list. Note these tweet ID's must be said exactly as displayed in the previous list including articles like "the".
4. Trending topics : The system will read out the latest topics that are trending on Twitter
5. Exit : The system will provide a goodbye message signalling the end of the interaction
6. Help : The system will provide a help message and read out the main menu again

*Note allowable affirmatives to system confirmations prompts are: Yes, Yeah, Yep, Correct, Right.

Allowable negatives to system confirmations are: no, nope.

Read Article

If the user previously selected to read a tweet (be it from his news feed or by a particular journalist) and if the tweet links to an article, the system will inform the user that the tweet links to an article and ask the user if he wishes for information about the article. If the user answers in the affirmative ("Yes, yeah, ok, alright") then the system will read out the introductory paragraph of the article to the user.

Twitter Action Menu

The Twitter Action Menu is read to the user during two situations :

1. After the user was read information about the article
2. The user chose not to read the article after reading the tweet

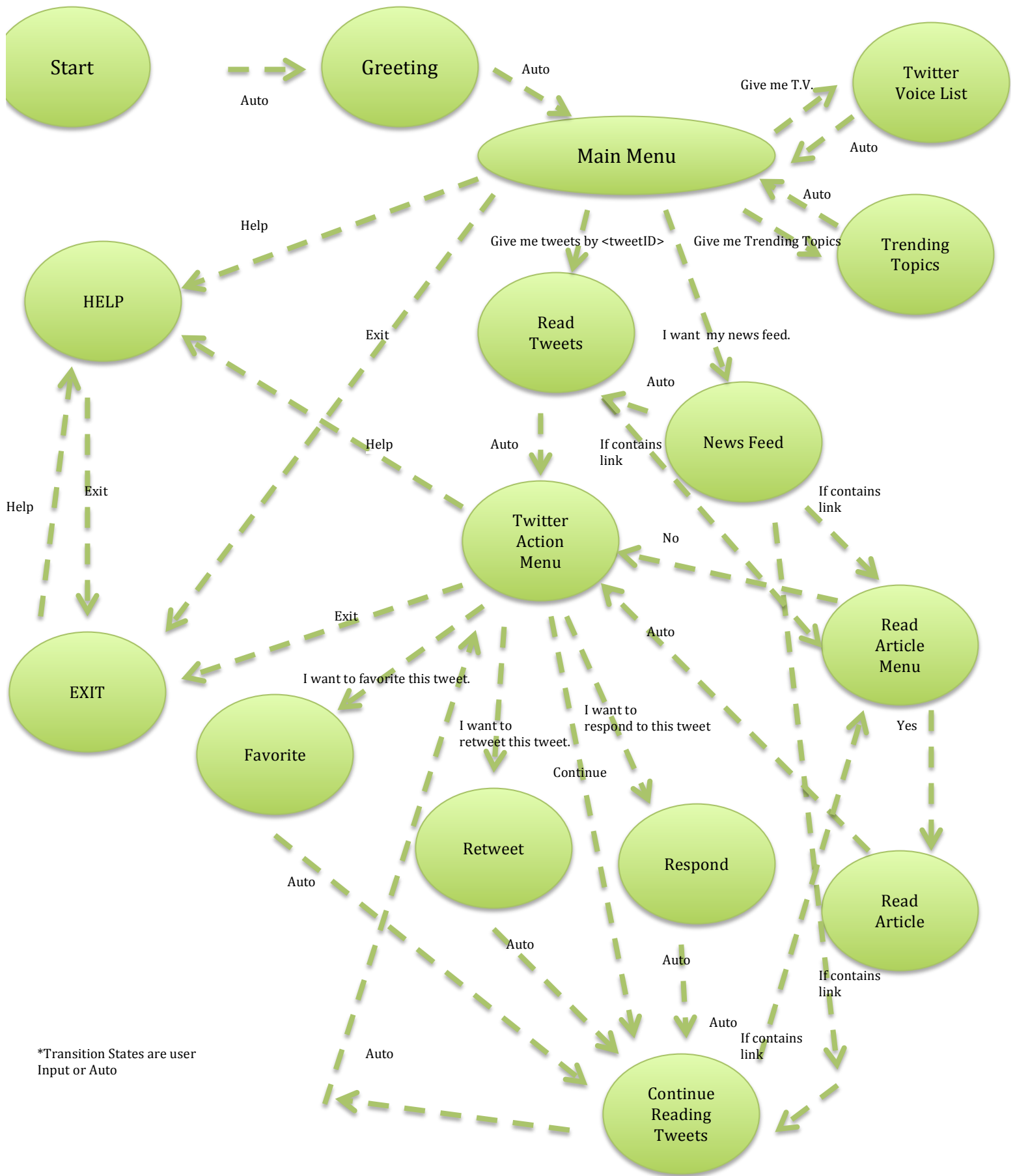
After the menu options are read out, the user can issue any of the following commands :

1. I want to retweet this one : The system will retweet the tweet on behalf of the user
2. I'd like to favorite this : The system will favorite the tweet on behalf of the user
3. I want to respond to this tweet : The system will present the user with the list of templates supported for responding to the tweet. The system will then prompt the user for choice. The user can respond in any of the following ways :
 1. Wonderful
 2. Need to think about this
 3. The one with Thoughtful
 4. I don't support this
 5. The first one
 6. The last one

On getting the choice, the system will respond to the tweet using the selected template on behalf of the user.

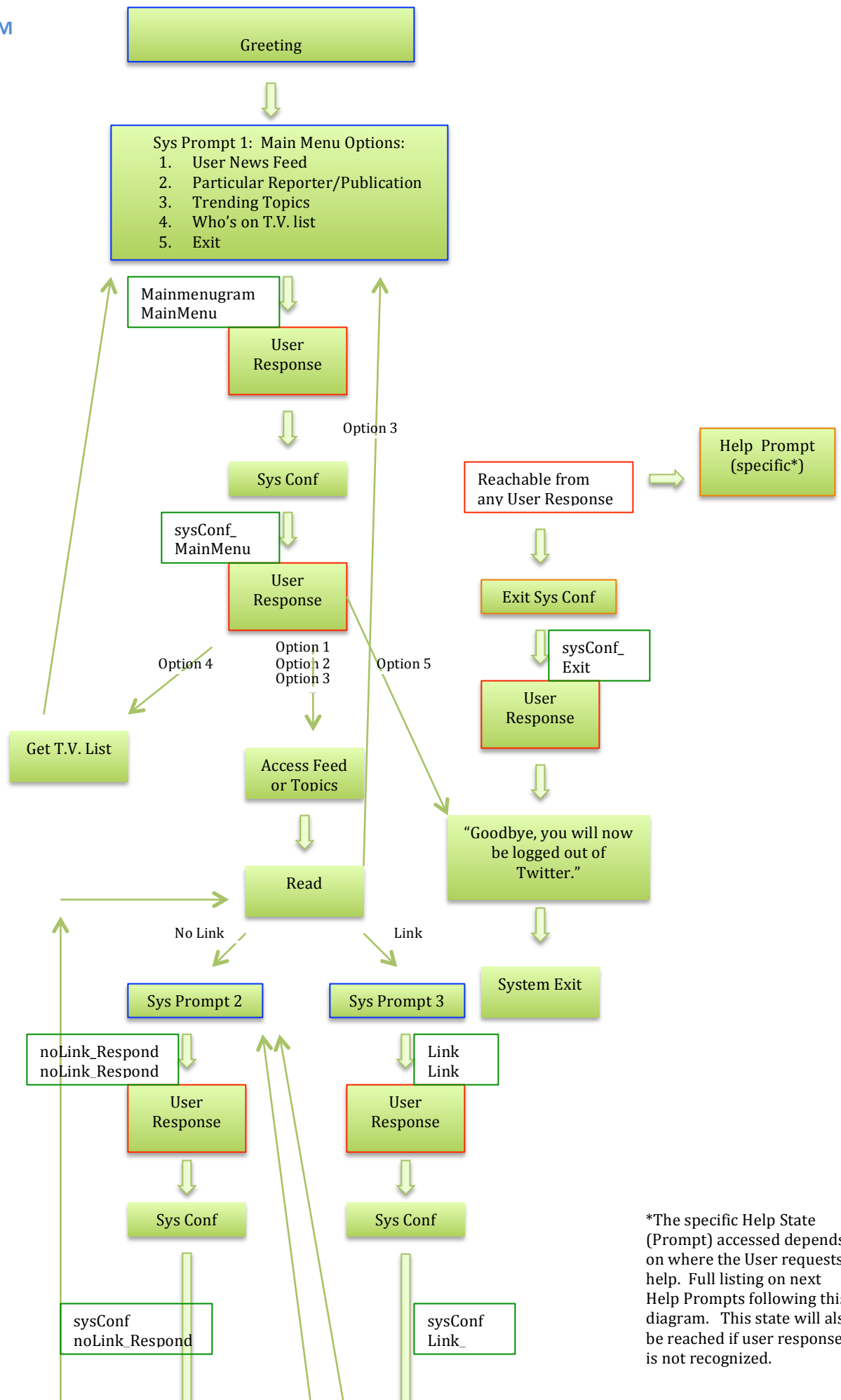
4. Continue : Based on whether the user had previously selected news feed or tweets by a particular journalist, the system will read out the next tweet from the list.
5. Exit : The system will provide a goodbye message signalling the end of the interaction
6. Help : The system will provide a help message and read out the main menu again

STATE DIAGRAM

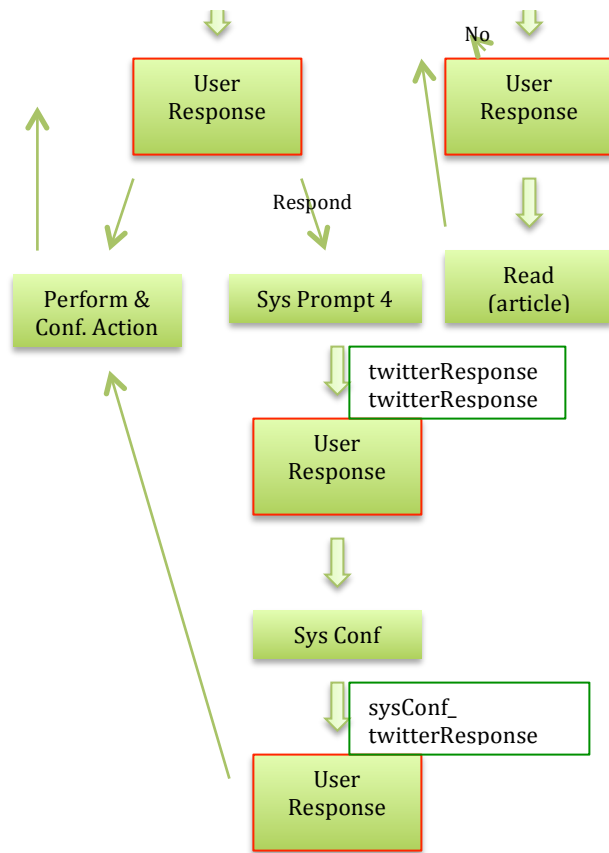


*Transition States are user Input or Auto

FLOW DIAGRAM



*The specific Help State (Prompt) accessed depends on where the User requests help. Full listing on next Help Prompts following this diagram. This state will also be reached if user response is not recognized.



User Response

When the system is in a user response state; besides accepting several different forms of the expected response it is also checking for several different responses that would put the system into a state specific help state or the “exit” system confirmation state. This is dependent on the response by the user. A complete list of accepted responses and their corresponding state change effect can be found on the next page.

System
Prompt 2

Do You wish to:

1. Retweet this tweet?
2. Favorite this tweet?
3. Respond to this tweet/Article?
4. Continue Reading Tweets?
5. Exit the Application?

System
Prompt 3

Do You wish to for information about the article?

System
Prompt 4

What would you like to say?

1. Wonderful. Great Article.
2. I Don't Agree with you.
3. Thoughtful read.
4. I need to think about this.

Grammar
Help
(utilized in this state)

Sample Interactions with Twitter Voice

Interacting with tweets by a particular journalist

System : Hi. Welcome to TwitterVoice. Let's get started.

System : Would you like your news feed or the twitter feed for a particular publication or reporter? How about Trending topics? You can also request to hear who is on your twitter voice list. You may also say exit. What would you like to do?

User : Give me tweets by Nicholas Kristof

System : You said you would like to read tweets by NICHOLAS KRISTOF right

User : Yes

System : Nicholas Kristof tweeted this 1 hour ago

System : Women dominate social networks but are absent from the corporate

System : Would you like to know more about the article this tweet links to?

User : Yes

System : You said you would like to read this article right

User : Yes

System : Lucia Graves wrote the article entitled Bipartisan Legislation Targets Federal Funding For Medical Marijuana Busts on May eighth two thousand and twelve writing WASHINGTON Sam Farr Dana Rohrabacher and Maurice Hinchey have joined forces in an effort to cut off funding

System : What would you like to do now? You could retweet this tweet, add it to your favorites, respond to it, or continue reading your TwitterVoice feed. As always, you can say Exit at any time.

User : I want to retweet this one.

System : You said you would like to retweet this tweet right?

User : Yes

System : You have retweeted this tweet by Nicholas Kristof

System : What would you like to do now? You could retweet this tweet, add it to your favorites, respond to it, or continue reading your TwitterVoice feed. As always, you can say Exit at any time.

User : Exit

System : You said you would like to exit right

User : Yes

System : Before I say goodbye, I'd like you to know that I've logged you out of Twitter too. Thanks and have a great day!

Getting trending topics

System : Hi. Welcome to TwitterVoice. Let's get started.

System : Would you like your news feed or the twitter feed for a particular publication or

reporter? How about Trending topics? You can also request to hear who is on your twitter voice list. You may also say exit. What would you like to do?

User : Trending topics

System : You said you would like to read trending topics right

User : Yes

System : The top five trending topics are If I Had A Gun La O John Travolta Camilla Belle Meek Mill

System : Would you like your news feed or the twitter feed for a particular publication or reporter? How about Trending topics? You can also request to hear who is on your twitter voice list. You may also say exit. What would you like to do?

User : Yes

System : Before I say goodbye, I'd like you to know that I've logged you out of Twitter too. Thanks and have a great day!

Changes to ASR and TTS

TTS

We made a lot of changes to the system prompts to be outputted by Festival, based on Rivka's feedback during our demo. The changes were primarily to make the prompts more fun, more descriptive and less ambiguous.

ASR

We changed the grammar in that we modularized it so that each grammar had fewer rules. The grammars were created based on the nature of the interaction that the user is having with the system. Hence, we created a grammar each to recognize :

1. User commands when main menu is read out
2. User commands to read article
3. User responses in case the system prompts a confirmation
4. User commands when the Twitter action menu is read out
5. User selection for templates for responding to a tweet

We split the grammar for two reasons :

1. Greater accuracy in recognizing speech within a context (i.e a particular stage in the system flow)
2. Faster recognition as the number of rules to be searched would be smaller in number than the grammar submitted in part 2

Corresponding to these grammars, we also modularized the Python scripts to invoke Pocket Sphinx so that the correct grammar was passed as an argument to the decoder.

Features

1. Preprocessing and normalization of text before passing it on to the TTS for example, stripping the text of non-standard English words, characters, converting dates to equivalent words etc.

2. Scraping of web pages from the New York Times and the Huffington Post using Jsoup.

Tradeoffs

1. We reduced the number of tweeters in the Twitter Voice list to reduce complexity.
2. Due to the vast vocabulary employed by Twitter users (English, slang, newly coined words etc.), we are relying on Festival to provide speech output for tweets. We also rely on Festival to read out news articles due to the vast vocabulary employed.
3. The grammars for the ASR recognize a limited number of specifiers (I want, Give me etc.) for the sake of reduced complexity.
4. The system asks confirmations from the user after every user input because we found that the autorecord script was very sensitive to input.
5. We are only reading the first 25 standard English words of articles from the New York Times and the Huffington Post. This is because every news website has a different markup structure for its webpages and the scraper API that we are using needs to be instructed on the format of these pages. Since this was one of the features of our application, we restricted the number of websites we could read from. This functionality can always be extended in the future to include more websites.