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10/31/2018

<div align="center">Human AI – Assignment 4</div>

<div align="center">TwitterBot Report</div>

For this assignment, we made a chatbot that uses twitter as a platform. In order to do this, we had to make use of Twitter's API and get a developer's account. We were asked questions during this process. We reflected on these questions, and considered the effectiveness of the solution.

We are being asked this due to the fact that Bots can be used to sway large groups of people in a political, religious, and overall important landscape. Improper use of Twitter's API has proven to be very unpredictable and can have ethical issues. Moreover, by using Twitter's APIs, it is increasingly easy to interact with users and use the data gathered to create a database of information about everyone on twitter. Based on how the bots will be acting and the actions they will be performing, there is differing levels of risk in what bots can do, from simply tweeting out a Shakespearean play to swaying elections. In order to prevent this, they put these questions in place to gauge the intents of the users.

However, this does not seem to be a very good at the intended purpose. For many people, they simply put in the simplest answers to the questions and many people gained immediate access to the APIs. If twitter intends to ban the bots that do not follow their standards, this might be a more viable solution. However, as a standalone method of determent, this is not a very secure solution.

For our Bot, we made Sammy Bot (@Sammy_Bot_CMU), which has access to CMU's Spring 2019 course list. It will respond with information about courses and the professors. This Bot can also try to reply to your emotions, such as replying to anger with a calming message. Some added functionality is the ability to respond with jokes and fun facts if the user prompts for it.

Our bot can also remember people's previous messages by remembering the information about people. This is done by remember the user's ID, their name, their last tweet's ID, and the classes and jokes mentioned previously. This is because these two situations require previous knowledge in order to respond. In doing so, the users are able to have multi-turn conversations without the chatbot completely forgetting what was said before. I decided to have the ID, name and last tweet ID so that we could keep track of the user's ID and prevent us from giving it the same information again. We chose to create this database using a dictionary of the values above. This created some limitations because of some unfamiliarity with python's dictionaries and their capabilities. Due to not being fully aware the functions this limited my ability to effectively handle data processing and changing statuses.

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When other users tested this, they initially found the lack of capabilities of Sammy Bot. We found many different ways that people like to phrase sentences and how they frame questions. Initially, Sammy Bot was given specific quotes to listen for and respond in order to reduce false positives. However, the users showed us that by limiting our responses to phrases, it prevents a lot of functionality by some users and leading them to be more frustrated. Therefore, we changed to using more keyword-specific searches and varied ways of recognizing it. For users, it seemed like they preferred when the bot would make guesses, correct or incorrect rather than have an ambiguous response. This also included ignoring some punctuation or capitalization and having a more varied input.

Moreover, our users showed us that although Sammy Bot is a chatbot at it's core, long chats are not always the goal. There are times when users preferred being able to get what they want with a simple command with all of the information. To them, if they know what they want, they should be able to illicit an immediate response. Finally, the users seemed to prefer if the bot seemed fun, or pleasant. They wanted to add helpful tips and a cute profile picture to lessen the coldness that is expected of a robot. They believed that talking to robots has a connotation of unresponsiveness and incapability. They preferred having a human-like figure or character to interact with rather than a machine.

In general, when users felt that the bot was could not identify the prompt and was confused in it's response, they reacted with a lot of frustration. The seemed to get frustrated quicker and have less patience. However, when the bot responded but made the wrong inference, they seemed to think it was funny rather than frustrating. This interaction showed that users prefer some sort of response to their prompt.

Each of the alterations led to a better response. By having a wider language pool, the bot is able to respond to barely intelligible sentences by using keywords and basic knowledge of negations. By allowing the phrasing the sentences in varied ways, Sammy Bot is able to respond to people with different speech patterns. By adding helpful hints and using leading questions, we can help the user tailor the response for the bot as well. Each of the changes made SammyBot more responsive and effective.

I believe that by testing for around 10 people, we can have our bot respond to a first-time user effectively. It is likely that if the user has some idea of how the bot should work, it will be incredibly easy for the user to get started. For us, by our third user, the bot was able to respond pretty effectively and guess at what the user needed from the bot. Therefore, each participant will likely make the bot stronger, and by around 10 trials, the bot should be able to respond to a pretty wide range that pertains to the topics that it is expected to do.