
Creating CartmanBot

Using Natural Language Processing to Create a Chatbot



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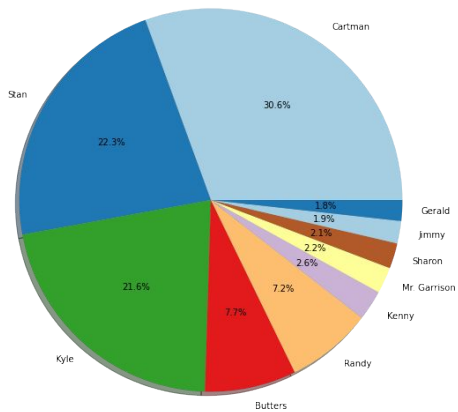
Problem Statement

- Everyone has a favorite fictional character
 - Only one way communication is available
 - Opportunity for a meaningful conversation and entertainment
- Develop a chatbot that mimics your favorite character
- Follow OSEMN Framework
 - Obtain, Scrub, Explore, Model and Interpret

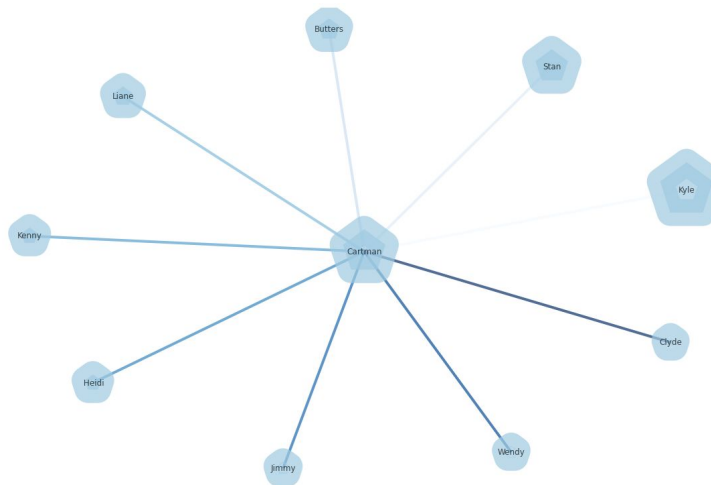
Obtaining and Cleaning the Data

- Fandom transcript website for South Park series
- Use html Scraping to obtain data
 - Requests
 - BeautifulSoup
- Construct a data frame with character names and dialogues
- Remove missing values, filler values and scene descriptions
- Every Cartman's line has 7 previous contextual dialogues

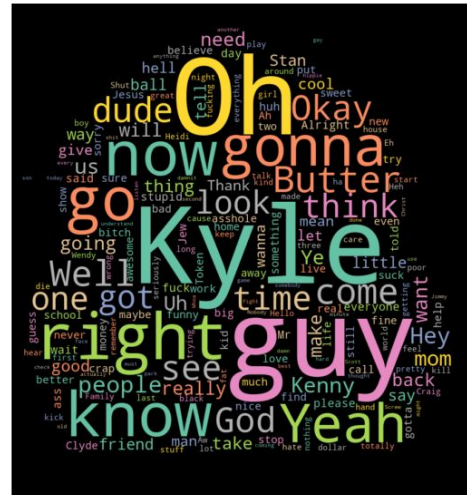
Exploration the Data



Characters with Most Dialogues



Characters Most Interacted with Cartman



Cartman's Favorite Words

Training the Model - ChatterBot Model

- Python library used to generate automated responses to a user's input
- Language independent
- Utilizes machine learning to improve knowledge of possible responses

```
print(my_bot.get_response('Hi Cartman'))
```

I don't know. Do you know where he is, Marvin?

```
print(my_bot.get_response('How are you?'))
```

This is sweet. Camera crews are setting up and I'm looking totally ripped. Beefcake. Beefcaaake!

```
print(my_bot.get_response("Where's Kyle?"))
```

Cartman, you fucking hunk of fat, rat-fucking hunk of pig-fucking ass fat.

```
print(my_bot.get_response("Where's Stan?"))
```

Aagh! Stupid dumb garbage!

Training the Model - DialoGPT Model

- Large-scale pretrained dialogue response generation model
- Trained on 147M multi-turn dialogue from Reddit discussion thread
- Comparable to human response quality

CartmanBot (with DialoGPT-small)

Hey Cartman, who is Mysterion?

He's Mysterion's son.

Who is better? Mysterion or the Coon?

Mysterion is the Coon.

I thought you are the Coon.

I'm not the Coon.

Stop lying.

Write to the chatbot...

Submit

```
>> User:Hello Cartman
CartmanBot: Oh, hello, Kyle.
>> User:Where's Stan?
CartmanBot: I'm not going to tell you, but I think he's dead.
>> User:What? How did he die?
CartmanBot: He was hiding in my room.
>> User:Did you kill him?
CartmanBot: No. He was lying in my bed.
>> User:And what did you do?
CartmanBot: !!!!!!!!!!!!!!!
```

Areas of Improvement

- Utilized more complex NLP models such as GPT3
- Train the model for more Epochs
- Search for dialogues from some missing episodes
- Deploy the chatbot in a permanent environment such as Telegram or Discord

The End

Thank You.