Why your business needs a Chatbot?

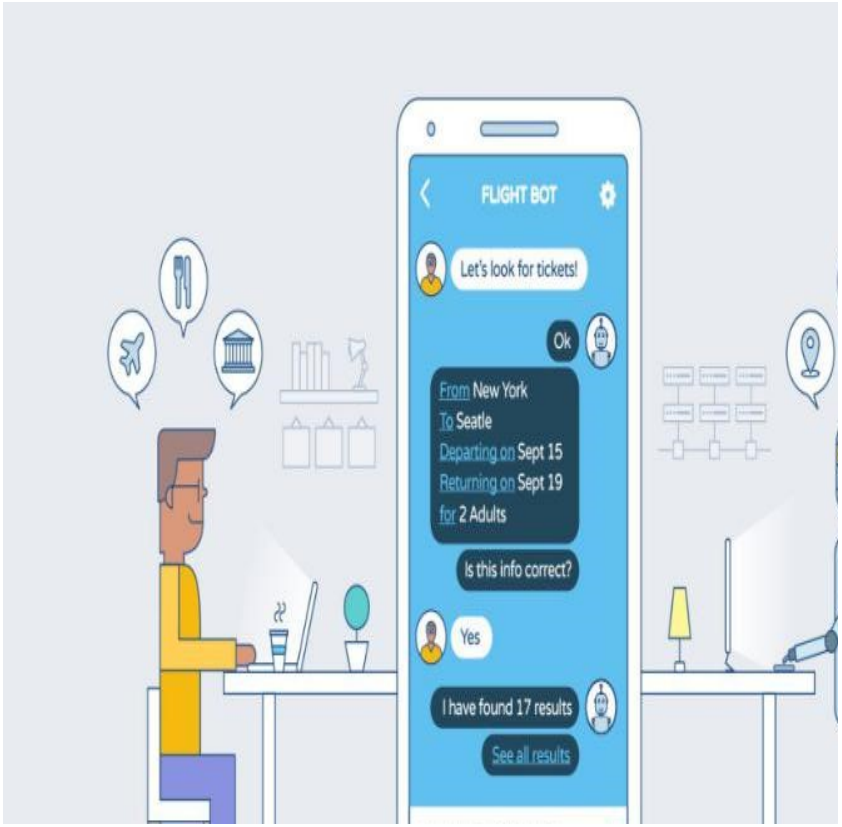
What is a Chatbot?

- Chatbot is a conversational agent that interacts with user using natural language
- It is often described as expressions of interacting between human and machine
- Simply, it is identifying the user's request and returning the response

Table of Contents

Background

- First Chatbot was developed in 1966 at MIT called ELIZA
- ELIZA was simple decision tree questions that answer a few questions
- Now it is developed into everyday life with messenger apps, voice assistant
- Chatbots are quickly replacing human for technical support and customer service



Problem statement

Objective

-> Every business needs a chatbot for their website or app.

-> Chatbot can replace a customer service agents for a 24 hour services and help business save money

Different methods to create a chatbot

- Creating set amount of patterns and response
- Using Rasa Framework
- Creating your own framework

Creating your own data/intents

- Intents are categories of the text of user's input
- Ex: 'Hi' would be a greeting, 'how can you help me?' would be a help intents
- Creating different intent for different purpose
- It is Great for FAQ and easy to create
- Creating different responses to those intents

Pre-processing/Neural Network Model

- Tokenize
- Removing Duplicate words
- Removing the ASCII and UTF 8 words (all the special character)
- Convert text into array of number

- Deep Neural Network Model
- 16 hidden Dense layers and “soft max” activation
- 99.8% accuracy

RASA Framework

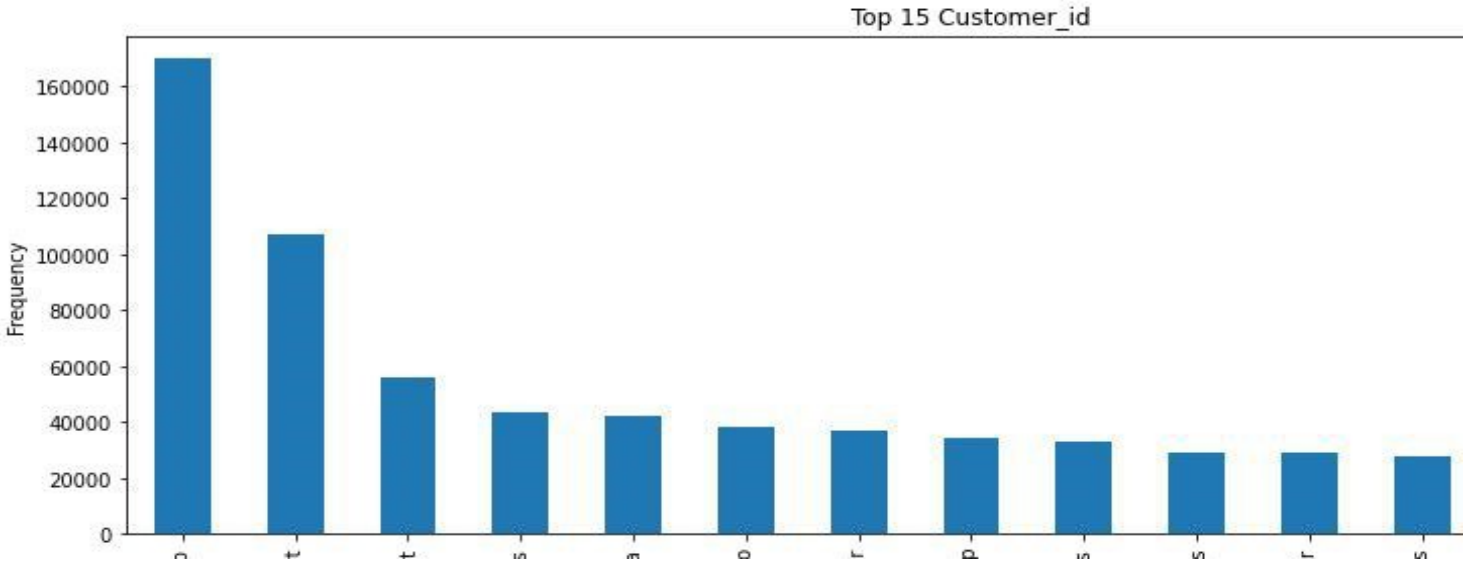
- Creating Intents
- Allows us create a storyline and it can store the previous answers
- So, the bot can continue a conversation

RASA Pipeline

- Whitespace Tokenizer (using whitespaces as a separator)
- Count Vectors Featurize(Creates bag-of-words representation of user messages, intents, and responses)
- N-gram from 1-4
- NLU model (Natural language understanding)

Creating your own framework

- Data: Twitter Customer Service Tweets(3.8 millions tweets)



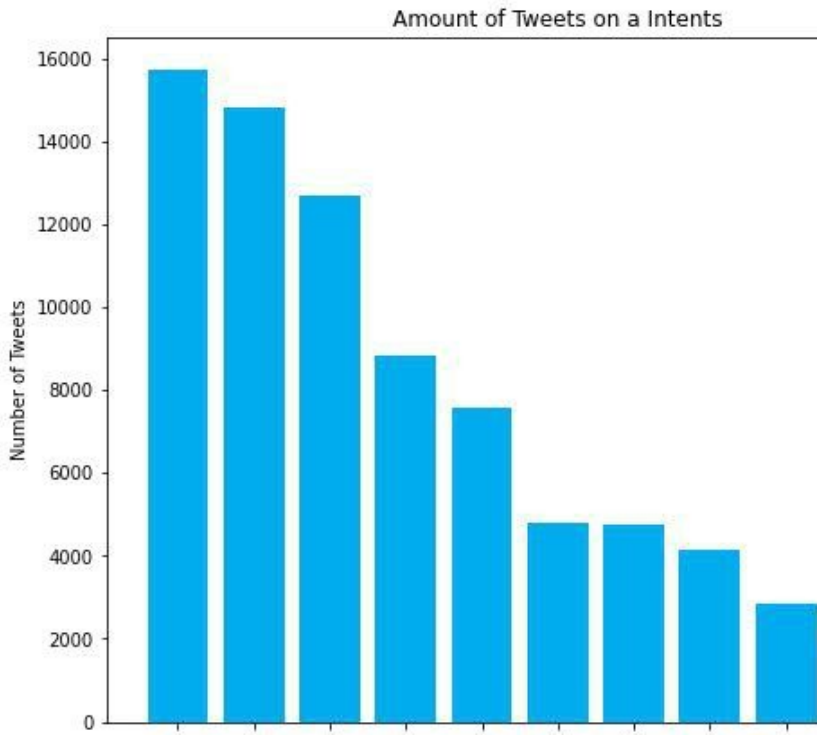
EDA/Preprocessing the Customer Tweet

- Remove all the non-english tweets
- Lemmatize
- Remove stopwords, href, @ handles
- Setting a limit on the length of the tweet at 5-40

	processed_tweet	customer_tweet	
0	[newest, update, made, sure, download, yesterday]	@AppleSupport The newest update. I made sure ...	@115854 Lets
6	[hey, anyone, else, upgraded, ios11, 1, issues...	Hey @AppleSupport and anyone else who upgraded...	@115856 Hey, I
12	[hello, internet, someone, explain, symbol, ke...	Hello, internet. Can someone explain why this ...	@115861 You

Creating Intents

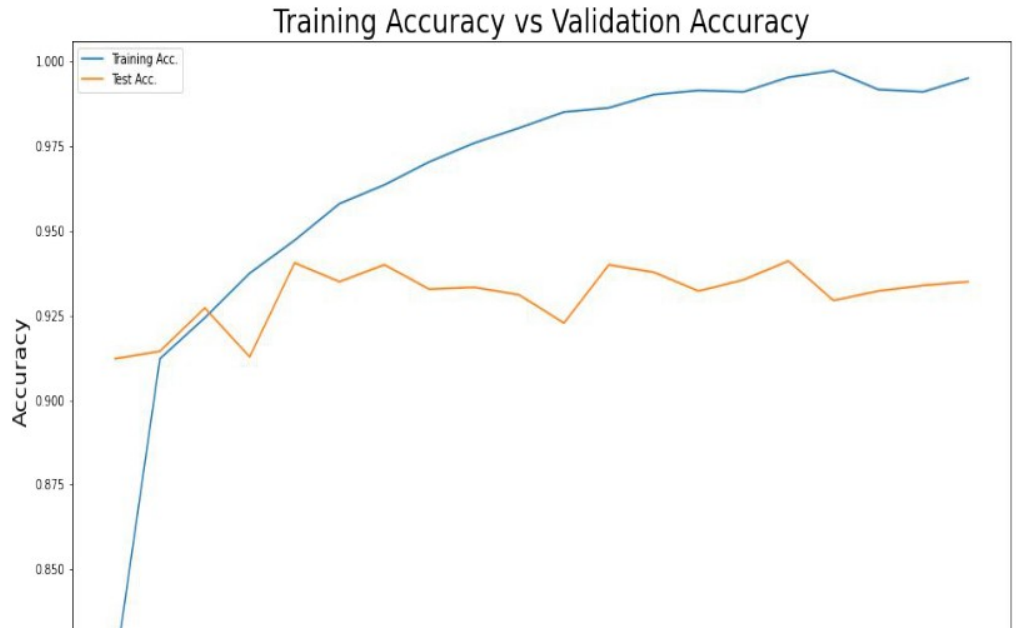
- The interpretation of a statement is what allows chatbot to formulate the best possible response.
- Matching tweets with the intents of the customer (Battery, Update, Macbook, and etc)

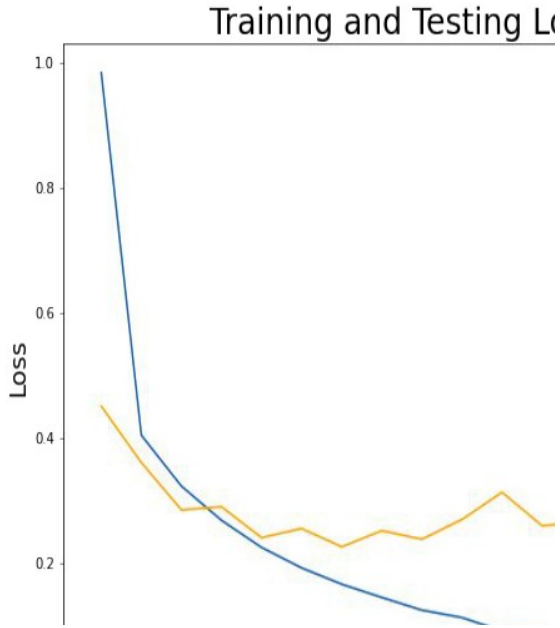


Modeling

Model	Sequential Model(RNN)
Embedding	Used for Neural Networks on Text Data
Bidirectional	LSTM: 128
Dense Layers	Number of Layers: 1, 2 Neurons: 600, 600
Dropout	Percent: 10%, 20%, 30%, 40**%**, **50**%

Model Performance





Conclusions

- Chatbot allows business to be to available to customer 24x7
- Huge expense cut/Alternative to customer service if needed
- Building chatbot based on your business

Next Steps

- Launching my own framework
- Deploying the other model on flask and heroku
- Connected the chatbot to SQL
- Creating a google search if it doesn’t understand the user’s input

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