



# Why your business needs a Chatbot?

By Tenzin Wangdu



# 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
- Problem Statement
- Different methods to create a chatbot
- Demo
- Modeling
- Conclusion

# 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

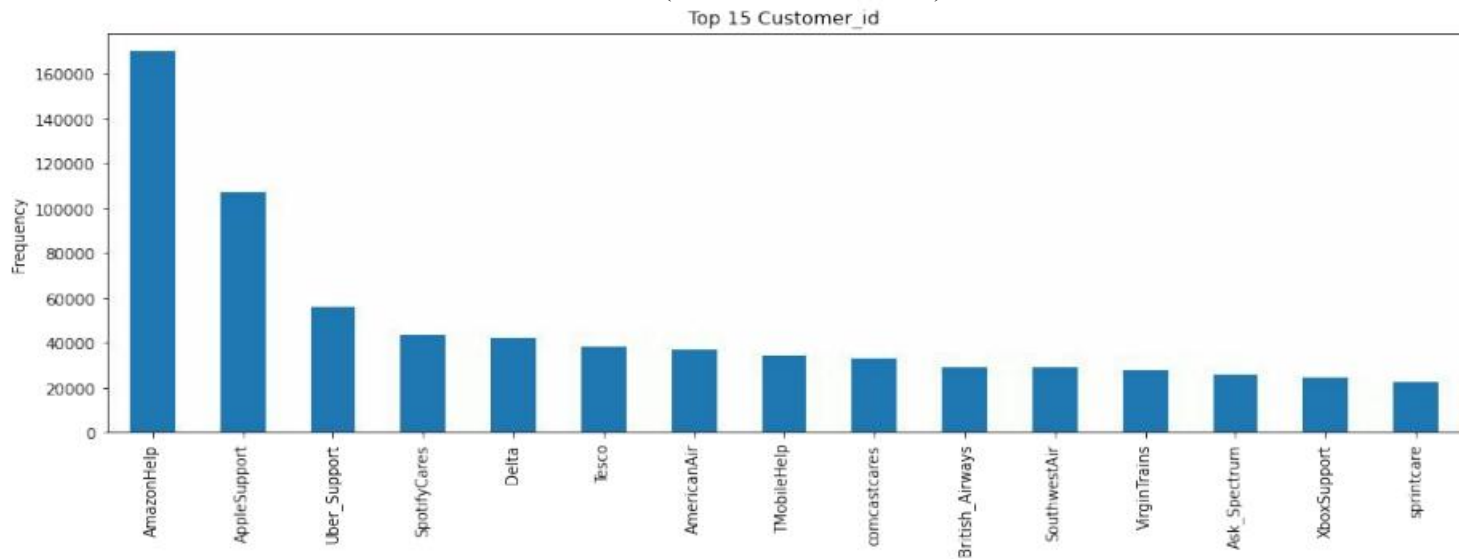


# RASA Pipeline

- 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)





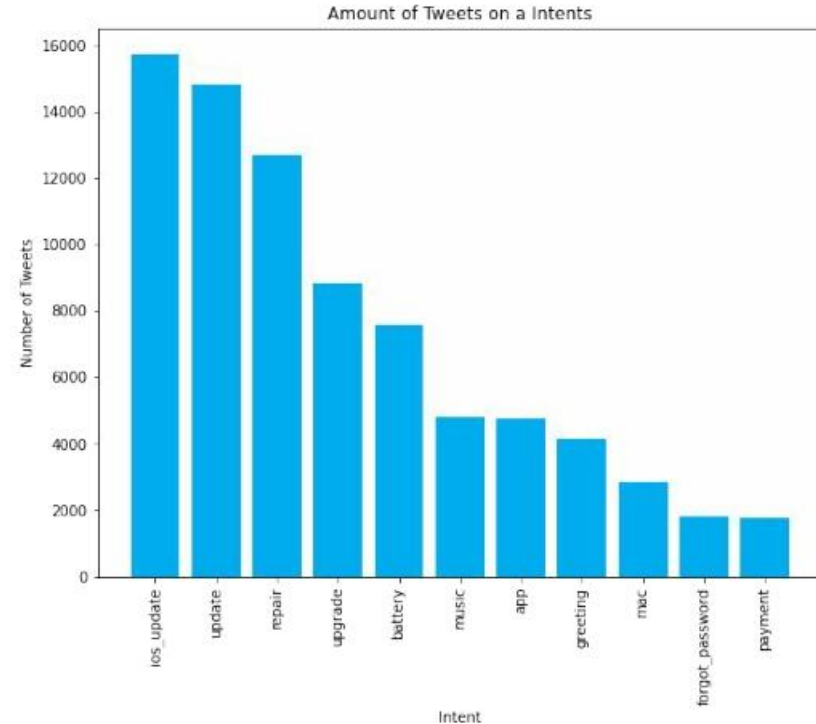
# EDA/Preprocessing the Customer Tweet

- ❖ 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	apple_tweet
0	[newest, update, made, sure, download, yesterday]	@AppleSupport The newest update. I made sure ...	@115854 Lets take a closer look into this issu...
6	[hey, anyone, else, upgraded, ios11, 1, issues...	Hey @AppleSupport and anyone else who upgraded...	@115856 Hey, let's work together to figure out...
12	[hello, internet, someone, explain, symbol, ke...	Hello, internet. Can someone explain why this ...	@115861 You're in the right place; we'll do al...
13	[got, screenshot, saying, iphonex, reserved, 3...	@AppleSupport I've got a screenshot saying my ...	@115863 Go ahead and send us a DM please. Let ...

# 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

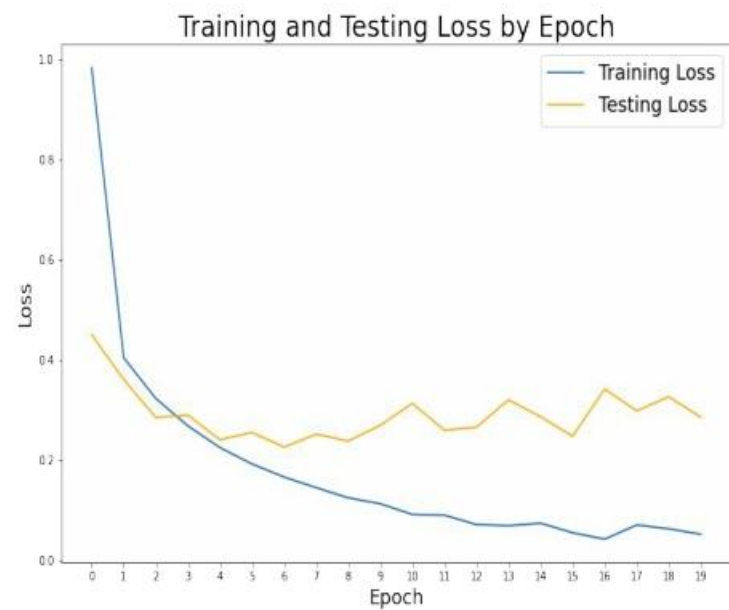
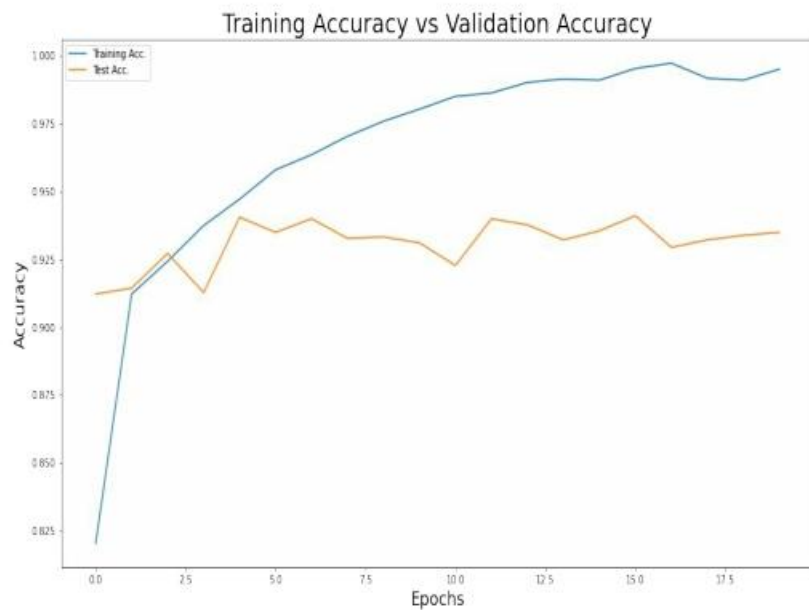
Number of Layers: 1, 2

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



**ANY QUESTION OR  
COMMENT!!!**