**CHATBOTS**

**from** IPython.core.display **import** Image, display

display(Image('Untitled.png'))

*#Used in Tensorflow Model*

**import** numpy **as** np

**import** tensorflow **as** tf

**import** tflearn

**import** random

*#Usde to for Contextualisation and Other NLP Tasks.*

**import** nltk

**from** nltk.stem.lancaster **import** LancasterStemmer

stemmer **=** LancasterStemmer()

*#Other*

**import** json

**import** pickle

**import** warnings

warnings**.**filterwarnings("ignore")

curses is not supported on this machine (please install/reinstall curses for an optimal experience)

In [3]:

print("Processing the Intents.....")

**with** open('intents.json') **as** json\_data:

intents **=** json**.**load(json\_data)

Processing the Intents.....

In [4]:

words **=** []

classes **=** []

documents **=** []

ignore\_words **=** ['?']

print("Looping through the Intents to Convert them to words, classes, documents and ignore\_words.......")

**for** intent **in** intents['intents']:

**for** pattern **in** intent['patterns']:

*# tokenize each word in the sentence*

w **=** nltk**.**word\_tokenize(pattern)

*# add to our words list*

words**.**extend(w)

*# add to documents in our corpus*

documents**.**append((w, intent['tag']))

*# add to our classes list*

**if** intent['tag'] **not** **in** classes:

classes**.**append(intent['tag'])

Looping through the Intents to Convert them to words, classes, documents and ignore\_words.......

In [5]:

print("Stemming, Lowering and Removing Duplicates.......")

words **=** [stemmer**.**stem(w**.**lower()) **for** w **in** words **if** w **not** **in** ignore\_words]

words **=** sorted(list(set(words)))

*# remove duplicates*

classes **=** sorted(list(set(classes)))

print (len(documents), "documents")

print (len(classes), "classes", classes)

print (len(words), "unique stemmed words", words)

Stemming, Lowering and Removing Duplicates.......

27 documents

9 classes ['goodbye', 'greeting', 'hours', 'mopeds', 'opentoday', 'payments', 'rental', 'thanks', 'today']

48 unique stemmed words ["'d", "'s", 'a', 'acceiv', 'anyon', 'ar', 'bye', 'can', 'card', 'cash', 'credit', 'day', 'do', 'doe', 'good', 'goodby', 'hav', 'hello', 'help', 'hi', 'hour', 'how', 'i', 'is', 'kind', 'lat', 'lik', 'mastercard', 'mop', 'of', 'on', 'op', 'rent', 'see', 'tak', 'thank', 'that', 'ther', 'thi', 'to', 'today', 'we', 'what', 'when', 'which', 'work', 'yo', 'you']

In [6]:

print("Creating the Data for our Model.....")

training **=** []

output **=** []

print("Creating an List (Empty) for Output.....")

output\_empty **=** [0] **\*** len(classes)

print("Creating Traning Set, Bag of Words for our Model....")

**for** doc **in** documents:

*# initialize our bag of words*

bag **=** []

*# list of tokenized words for the pattern*

pattern\_words **=** doc[0]

*# stem each word*

pattern\_words **=** [stemmer**.**stem(word**.**lower()) **for** word **in** pattern\_words]

*# create our bag of words array*

**for** w **in** words:

bag**.**append(1) **if** w **in** pattern\_words **else** bag**.**append(0)

*# output is a '0' for each tag and '1' for current tag*

output\_row **=** list(output\_empty)

output\_row[classes**.**index(doc[1])] **=** 1

training**.**append([bag, output\_row])

Creating the Data for our Model.....

Creating an List (Empty) for Output.....

Creating Traning Set, Bag of Words for our Model....

In [7]:

print("Shuffling Randomly and Converting into Numpy Array for Faster Processing......")

random**.**shuffle(training)

training **=** np**.**array(training)

print("Creating Train and Test Lists.....")

train\_x **=** list(training[:,0])

train\_y **=** list(training[:,1])

print("Building Neural Network for Out Chatbot to be Contextual....")

print("Resetting graph data....")

tf**.**reset\_default\_graph()

Shuffling Randomly and Converting into Numpy Array for Faster Processing......

Creating Train and Test Lists.....

Building Neural Network for Out Chatbot to be Contextual....

Resetting graph data....

In [8]:

net **=** tflearn**.**input\_data(shape**=**[**None**, len(train\_x[0])])

net **=** tflearn**.**fully\_connected(net, 8)

net **=** tflearn**.**fully\_connected(net, 8)

net **=** tflearn**.**fully\_connected(net, len(train\_y[0]), activation**=**'softmax')

net **=** tflearn**.**regression(net)

print("Training....")

Training....

In [ ]:

model **=** tflearn**.**DNN(net, tensorboard\_dir**=**'tflearn\_logs')

In [ ]:

print("Training the Model.......")

model**.**fit(train\_x, train\_y, n\_epoch**=**1000, batch\_size**=**8, show\_metric**=True**)

print("Saving the Model.......")

model**.**save('model.tflearn')

Training Step: 3999 | total loss: **0.06984** | time: 0.011s

| Adam | epoch: 1000 | loss: 0.06984 - acc: 0.9976 -- iter: 24/27

Training Step: 4000 | total loss: **0.07164** | time: 0.014s

| Adam | epoch: 1000 | loss: 0.07164 - acc: 0.9978 -- iter: 27/27

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Saving the Model.......

INFO:tensorflow:E:\FreeBirdsCrew\Chatbot\model.tflearn is not in all\_model\_checkpoint\_paths. Manually adding it.

In [ ]:

print("Pickle is also Saved..........")

pickle**.**dump( {'words':words, 'classes':classes, 'train\_x':train\_x, 'train\_y':train\_y}, open( "training\_data", "wb" ) )

Pickle is also Saved..........

In [ ]:

print("Loading Pickle.....")

data **=** pickle**.**load( open( "training\_data", "rb" ) )

words **=** data['words']

classes **=** data['classes']

train\_x **=** data['train\_x']

train\_y **=** data['train\_y']

**with** open('intents.json') **as** json\_data:

intents **=** json**.**load(json\_data)

print("Loading the Model......")

*# load our saved model*

model**.**load('./model.tflearn')

Loading Pickle.....

Loading the Model......

INFO:tensorflow:Restoring parameters from E:\FreeBirdsCrew\Chatbot\model.tflearn

In [ ]:

**def** clean\_up\_sentence(sentence):

*# It Tokenize or Break it into the constituents parts of Sentense.*

sentence\_words **=** nltk**.**word\_tokenize(sentence)

*# Stemming means to find the root of the word.*

sentence\_words **=** [stemmer**.**stem(word**.**lower()) **for** word **in** sentence\_words]

**return** sentence\_words

*# Return the Array of Bag of Words: True or False and 0 or 1 for each word of bag that exists in the Sentence*

**def** bow(sentence, words, show\_details**=False**):

sentence\_words **=** clean\_up\_sentence(sentence)

bag **=** [0]**\***len(words)

**for** s **in** sentence\_words:

**for** i,w **in** enumerate(words):

**if** w **==** s:

bag[i] **=** 1

**if** show\_details:

print ("found in bag: %s" **%** w)

**return**(np**.**array(bag))

ERROR\_THRESHOLD **=** 0.25

print("ERROR\_THRESHOLD = 0.25")

**def** classify(sentence):

*# Prediction or To Get the Posibility or Probability from the Model*

results **=** model**.**predict([bow(sentence, words)])[0]

*# Exclude those results which are Below Threshold*

results **=** [[i,r] **for** i,r **in** enumerate(results) **if** r**>**ERROR\_THRESHOLD]

*# Sorting is Done because heigher Confidence Answer comes first.*

results**.**sort(key**=lambda** x: x[1], reverse**=True**)

return\_list **=** []

**for** r **in** results:

return\_list**.**append((classes[r[0]], r[1])) *#Tuppl -> Intent and Probability*

**return** return\_list

**def** response(sentence, userID**=**'123', show\_details**=False**):

results **=** classify(sentence)

*# That Means if Classification is Done then Find the Matching Tag.*

**if** results:

*# Long Loop to get the Result.*

**while** results:

**for** i **in** intents['intents']:

*# Tag Finding*

**if** i['tag'] **==** results[0][0]:

*# Random Response from High Order Probabilities*

**return** print(random**.**choice(i['responses']))

results**.**pop(0)

ERROR\_THRESHOLD = 0.25

In [ ]:

das

In [ ]:

**while** **True**:

input\_data **=** input("You- ")

answer **=** response(input\_data)

answer

You- Hi

Hello, thanks for visiting

You- open today?

Our hours are 9am-9pm every day

You- mopeds

Hi there, how can I help?

You- rent?

Hi there, how can I help?

You- rent mopeds?

Hello, thanks for visiting

You- rental

Good to see you again

You- Rental Mopends?

Hi there, how can I help?

You- how Much?

Good to see you again

You- much?

Bye! Come back again soon.

You- much

See you later, thanks for visiting

You- s

See you later, thanks for visiting

You- d

See you later, thanks for visiting

You- f

Bye! Come back again soon.

You- g

Have a nice day

You- h

See you later, thanks for visiting

You- j

Have a nice day

You- e

Have a nice day

You- r

See you later, thanks for visiting

You- s

Have a nice day

You- ad

Have a nice day

You- a

Have a nice day

You- da

Have a nice day

You-

Bye! Come back again soon.

You- a

Have a nice day

You- hi

Hello, thanks for visiting

You- mopads rent

Good to see you again

You- rent of mopads?

Good to see you again

You- yea

See you later, thanks for visiting