



PES UNIVERSITY (RR CAMPUS)



UE20EC351 - MACHINE LEARNING

TOPIC: A Chatbot for the PES website

TEAM COMPOSITION

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SUBMITTED TO:

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PROBLEM STATEMENT:

To develop a chatbot as an accessory to the PES website using Natural Language Toolkit to train the feed forward neural network with two hidden layers

INTRODUCTION:

A chatbot is a computer program that uses artificial intelligence (AI) and natural language processing (NLP) to understand customer questions and automate responses to them, simulating human conversation.

DATASET USED:

Training data used was created by us.

Different intents have been given and for each intent we have tags (class label) and we have pattern for these tags and responses for these tags.

When a new question comes in our bot tries to classify it into one of the tags and picks answers from that particular tag response

METHODOLOGY:

PREPROCESSING

Neural linguistic programming

Tokenization: splitting a string into meaningful units
(e.g. words, punctuation characters, numbers)

"what would you do with 1000000\$?"

→ ["what", "would", "you", "do", "with", "1000000", "\$", "?"]

"aren't you happy with so much money?"

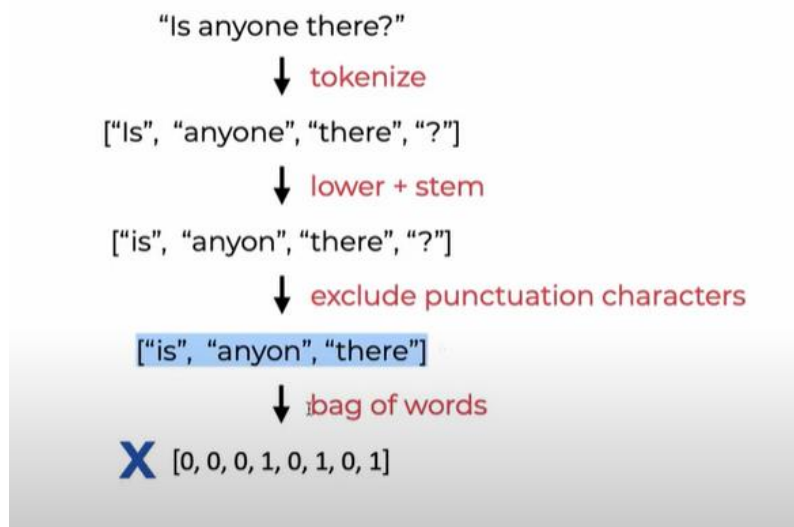
→ ["are", "n't", "you", "happy", "with", "so", "much", "money", "?"]

Stemming: Generate the root form of the words.
Crude heuristic that chops off the ends of words

“organize”, “organizes”, “organizing”
→ [“organ”, “organ”, “organ”]

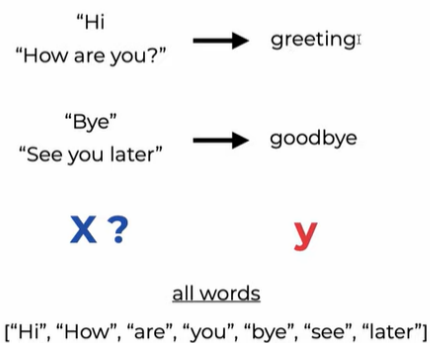
“universe”, “university”
→ [“univers”, “univers”]

Our NLP Preprocessing Pipeline



TRAINING THE DATA SET

It is done using a feed forward neural network with two hidden layers.



bag of words

all words

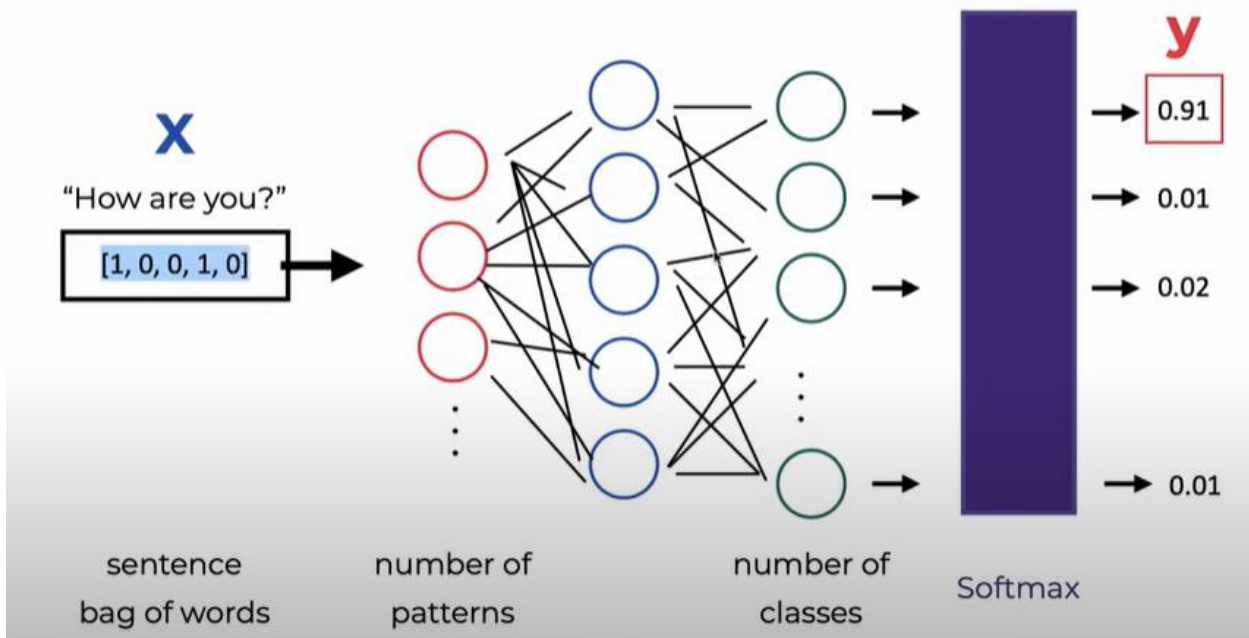
["Hi", "How", "are", "you", "bye", "see", "later"]

"Hi"	→	[1, 0, 0, 0, 0, 0, 0]	0 (greeting)
"How are you?"	→	[0, 1, 1, 1, 0, 0, 0]	
"Bye"	→	[0, 0, 0, 0, 1, 0, 0]	1 (goodbye)
"See you later"	→	[0, 0, 0, 1, 0, 1, 1]	

X

y

Feed Forward Neural Net



OUTPUTS:

Training

```
ytorch-chatbot-master/train.py
[nltk_data] Downloading package punkt to
[nltk_data] C:\Users\Wiharika\AppData\Roaming\nltk_data...
[nltk_data] Package punkt is already up-to-date!
38 patterns
11 tags: ['Branches', 'Chancellor', 'Faculty', 'Fee', 'PES', 'Programs', 'end sem', 'goodbye', 'greeting', 'name', 'number']
59 unique stemmed words: ['about', 'am', 'annual', 'anyon', 'are', 'avall', 'brach', 'branch', 'bye', 'can', 'chancellor', 'colleg', 'contact', 'cou
rc', 'cse', 'day', 'end', 'engin', 'esa', 'exam', 'faculti', 'fee', 'final', 'for', 'founder', 'give', 'good', 'goodby', 'hello', 'hey', 'hi', 'how'
, 'i', 'info', 'inform', 'is', 'later', 'mani', 'me', 'name', 'number', 'of', 'offer', 'pe', 'pesit', 'program', 'see', 'sem', 'talk', 'tell', 'the'
, 'there', 'thi', 'to', 'what', 'when', 'who', 'you', 'your']
59 11
Epoch [100/1000], Loss: 1.3939
Epoch [200/1000], Loss: 0.1497
Epoch [300/1000], Loss: 0.0308
Epoch [400/1000], Loss: 0.0139
Epoch [500/1000], Loss: 0.0104
Epoch [600/1000], Loss: 0.0036
Epoch [700/1000], Loss: 0.0019
Epoch [800/1000], Loss: 0.0019
[nltk_data] Downloading package punkt to
[nltk_data] C:\Users\Wiharika\AppData\Roaming\nltk_data...
[nltk_data] Package punkt is already up-to-date!
```

Chatbot execution

```
Let's chat! (type 'quit' to exit)
You: hey
PES bot: Hi there, how can I help?
You: what is the annual fee
PES bot: Pessat quota :3,00,000 , Cet quota : 1,00,000
You: who is this
PES bot: I am PES bot
You: how can i contact you
PES bot: 080-10-297297
You: █
```

Activate Windows
Go to Settings to activate Windows.

