Laptop Recommendation Chat Bot

Anshuman Singh, Yashwanth Reddy
School of Computer Science and Engineering
Vellore Institute Of Technology, Chennai.

Abstract

Natural Language Processing (NLP) is basically how you can teach machines to understand human languages and extract meaning from text. Language as a structured medium of communication is what separates us human beings from animals. We are surrounded by text data all the time sourced from books, emails, blogs, social media posts, news and more. Natural Language Processing is expected to be worth 30 Billion USD by 2024 with the past few years seeing immense improvements in terms of how well it is solving industry problems at scale. Natural language processing includes many methodologies that have the capability of understanding and producing natural language as used by human beings regardless of that language is. We will be using some methodology to try and understand human language and create a chat bot that can converse with humans over the internet and make useful recommendations about laptops to the users An NLP based chatbot is a computer program or artificial intelligence that communicates with a customer via textual or sound methods. Chatbots are applications that imitate human conversations for solving various tasks. Everything we express in written or verbal form encompasses a huge amount of information that goes way beyond the meaning of individual words. The combination of topic, tone, selection of words, sentence structure, punctuation/expressions allows humans to interpret that information, its value, and intent. Theoretically, humans are programmed to understand and often even predict other people's behavior using that complex set of information.

1 Introduction

In this project we will try to create a chat bot that will have only one purpose which will be to recommend laptops to the user based on their question. The idea is that the users will open start talking to the chat bot and they will ask a question, based on that question the chat bot will generate a fitting response and send it to the user. We are using two different approaches for this purpose and will be comparing their performance. The first approach is to use simple Tf-Idf approach to generate responses. The second approach is to use deep learning and bag or words approach. As the name suggests, bag of word, the concept is to create a bag of words from the clutter of words, which is also called as the corpus. It is the simplest form of representing words in the form of numbers. We convert the words to digits because the system needs the information in the form of numbers, or else it won't be able to process the data.We convert the words to numbers by analyzing the presence of the word in a particular sentence. A number is denoted as an encoded value against the word. This is the number of times that word has been represented in the sentence. If only the presence is to be considered, then the game is denoted in form 1's and 0's. When the word is present in the sentence, it is denoted as 1 else 0. This is called a binary bag of words. Tf-idf is a method which is based on the frequency method but it is different to the bag-of words approach in the sense that it takes into account not just the occurrence of a word in a single document but in the entire corpus. TF-IDF works by penalising the common words by assigning them lower weights while giving importance to words which are rare in the entire corpus but appear in good numbers in few documents. Important terms related to TF-IDF:
TF (Number of times term t appears in a document)/(Number of terms in the document)
IDF=log(N/n), where, N is the number of documents and n is the number of documents a term t has appeared in.
TF-IDF=TF'IDF

2 Proposed Work

We will be using two methods in order to create this chat bot. The first approach will be using the TF-IDF approach and the second will be to use deep learning using bag of words and Tf learn library in python. Tf- IDF stands for Term frequency – Inverse Document Frequency ,it is a technique to quantify words in a set of documents. We generally compute a score for each word to signify its importance in the document and corpus. Bag of Words model is a way of extracting features from text for use in modelling such as with machine learning algorithms, which we'll be using in this project.

3 Dataset

We will be creating a custom made dataset for this chat bot, this is because we could not find a dataset online that suited our needs for this project. We will create and use the database in csv format for the TF-IDF chat bot and the same dataset in json format for the deep learning chat bot. Note that the two datasets are almost alike with the only difference being that the deep learning dataset has some extra question.

4 Real world applications

There are many applications of chat bot that will help customers customer journey smoother. Anyone in e-commerce will know the pain of losing prospects halfway through a marketing funnel. It doesn't take much to deter people from completing a purchase online, whether it's a confusing check-out system or hidden costs.

Buying a laptop is a big decision: You may end up using it for several years before getting another, and there are many makes, models, and chip configurations to choose from. also often a lots of people don't know exactly what they need, or what all the various hardware jargon means to solve this problem we have come up with this idea to create a chat bot that recommends it's users which laptop will be suitable for them. For example: This chat bot can be used by college students and other people to find affordable and good laptops. The chatbot suggests multiple laptops according to user's input. So the user will have multiple options to choose from. Using this chatbot people can easily find laptops according to their requirements.

Also, there are many applications of chat bot which are given below:

1.Food Ordering
The second commonly visible application of chatbots is evident in the case of food delivery. Notable names such as Pizza Hut and KFC use chatbots for allowing customers to place orders through a conversation.

2.Companionship Applications
Chatbots could also be a game-changer in terms of companionship. The applications of chatbots as virtual and digital assistants could help in providing companionship to people in need, such as elderly people and Alzheimer's patients.

3.Healthcare Applications
The chatbot examples in the healthcare sector also showcase the breadth of the reach of chatbots. Chatbots, such as Super Izzy has been helping medical professionals in providing quick medical diagnosis and answers to health-related questions.

5 References

https://courses.analyticsvidhya.com/courses/take/twitter-sentiment-analysis/texts/6122379-tf-idf-features
https://courses.analyticsvidhya.com/courses/Intro-to-NLP
https://dataaspirant.com/bag-of-words-bow/#t-1610979588750
https://landbot.io/blog/natural-language-processing-chatbot
https://sloboda-studio.com/blog/how-to-use-nlp-for-building-a-chatbot/
https://towardsdatascience.com/how-to-build-a-chatbot-a-lesson-in-/nlp-d0df588afa4b