# Project Title

The title of the project is a travel guidance chatbot for convenient journeys . Basically *C*hatbots are a new-age interface that can help you interact with customers. The interaction is both human-like and personalized. Indeed, they respond to customers within no time with the maximum possible information. Chatbots only get smarter with more time and more data.
Gone are the days when travelers had to visit their local travel agents to book flights or lookup hotels. To serve technologically proficient customers, the travel industry is coming up with various tools and this has been bringing about a whole new wave in the travel industry today. Chatbots in the travel industry automate travel-related tasks. From flight bookings, hotel bookings, recommendations to being a virtual tour guide, travel chatbots can do it all for users.

**Taxonomy used in the project**

Natural language processing (NLP) refers to the branch of computer science—and more specifically, the branch of artificial intelligence or AIconcerned with giving computers the ability to understand text and spoken words in much the same way human beings can.NLP combines computational linguistic rule-based modeling of human language—with statistical, machine learning, and deep learning models. Together, these technologies enable computers to process human language in the form of text or voice data and to 'understand' its full meaning, complete with the speaker or writer's intent and sentiment.

NLP drives computer programs that translate text from one language to another, respond to spoken commands, and summarize large volumes of text rapidly—even in real time. There's a good chance you've interacted with NLP in the form of voice-operated GPS systems, digital assistants, speech-to-text dictation software, customer service chatbots, and other consumer conveniences. But NLP also plays a growing role in enterprise solutions that help streamline business operations, increase employee productivity, and simplify mission-critical business processes.

Chatbots perform the same magic in response to typed text entries. The best of these also learn to recognize contextual clues about human requests and use them to provide even better responses or options over time. The next enhancement for these applications is question answering, the ability to respond to our questions—anticipated or not—with relevant and helpful answers in their own words.

**JSON file for data dictionary**

A JSON file is a file that stores simple data structures and objects in JavaScript Object Notation (JSON) format, which is a standard data interchange format. It is primarily used for transmitting data between a web application and a server. JSON files are lightweight,text-based, human-readable, and can be edited using a text editor.we used json file for storing data as

patterns and responses format for getting answers for chatbot.

**Natural Language Toolkit ( NLTK)**

The Natural Language Toolkit, or more commonly NLTK, is a suite of libraries and programs for symbolic and statistical natural language processing for English written in the Python programming language.Natural language processing (NLP) is a field that focuses on making natural human language usable by computer programs. NLTK, or Natural Language Toolkit, is a Python package that you can use for NLP. NLTK (Natural Language Toolkit) Library is a suite that contains libraries and programs for statistical language processing. It is one of the most powerful NLP libraries, which contains packages to make machines understand human language and reply to it with an appropriate response.

**Tokenization** is the process by which a large quantity of text is divided into smaller parts called tokens. These tokens are very useful for finding patterns and are considered as a base step for stemming and lemmatization. Tokenization also helps to substitute sensitive data elements with non-sensitive data elements.

**Tokenization of words**

We used the method **word_tokenize()** to split a sentence into words. The output of word tokenization can be converted to Data Frame for better text understanding in machine learning applications. It can also be provided as input for further text cleaning steps such as punctuation removal, numeric character removal or stemming. Machine learning models need numeric data to be trained and make a prediction. Word tokenization becomes a crucial part of the text (string) to numeric data conversion.

**Lemmatization and Stemming for normalization**

Lemmatization is the process of converting a word to its base form. The difference between stemming and lemmatization is, lemmatization considers the context and converts the word to its meaningful base form, whereas stemming just removes the last few characters, often leading to incorrect meanings and spelling errors.Stemming is a method of normalization of words in Natural Language Processing. It is a technique in which a set of words in a sentence are converted into a sequence to shorten its lookup. In this method, the words having the same meaning but have some variations according to the context or sentence are normalized.

Stemming and Lemmatization in Python NLTK are text normalization techniques for Natural Language Processing. These techniques are widely used for text preprocessing. The difference between stemming and lemmatization is that stemming is faster as it cuts words without knowing the context, while lemmatization is slower as it knows the context of words before processing.

**Training Model**

A training model is a dataset that is used to train an ML algorithm. It consists of the sample output data and the corresponding sets of input data that have an influence on the output. The training model is used to run the input data through the algorithm to correlate the processed output against the sample output.This iterative process is called “model fitting”. The accuracy of the training dataset or the validation dataset is critical for the precision of the model.

Model training in machine language is the process of feeding an ML algorithm with data to help identify and learn good values for all attributes involved. There are several types of machine learning models, of which the most common ones are supervised and unsupervised learning.Supervised learning is possible when the training data contains both the input and output values. Each set of data that has the inputs and the expected output is called a supervisory signal. The training is done based on the deviation of the processed result from the documented result when the inputs are fed into the model.Unsupervised learning involves determining patterns in the data. Additional data is then used to fit patterns or clusters. This is also an iterative process that improves the accuracy based on the correlation to the expected patterns or clusters. There is no reference output dataset in this method.

Prediction refers to the output of an algorithm after it has been trained on a historical dataset and applied to new data when forecasting the likelihood of a particular outcome, such as whether or not a customer will churn in 30 days. The algorithm will generate probable values for an unknown variable for each record in the new data, allowing the model builder to identify what that value will most likely be. After training we used the prediction concept of AI for answering users or questions.

**Project problem formulation**

Tourists have to spend a lot of time searching for an appropriate flight, hotel or restaurant.They face problems due to scattered data on websites and unable to find user-friendly interfaces.Being in a foreign land, they feel helpless in case of emergency or a panic situation.Their travel experience becomes miserable if they don't have anyone to guide them like a friend.There's no assistant to deal with tourists' problems such as medical emergency, currency exchange, etc Sometimes websites are not update data about travel. Websites can’t give answers to each question of users.

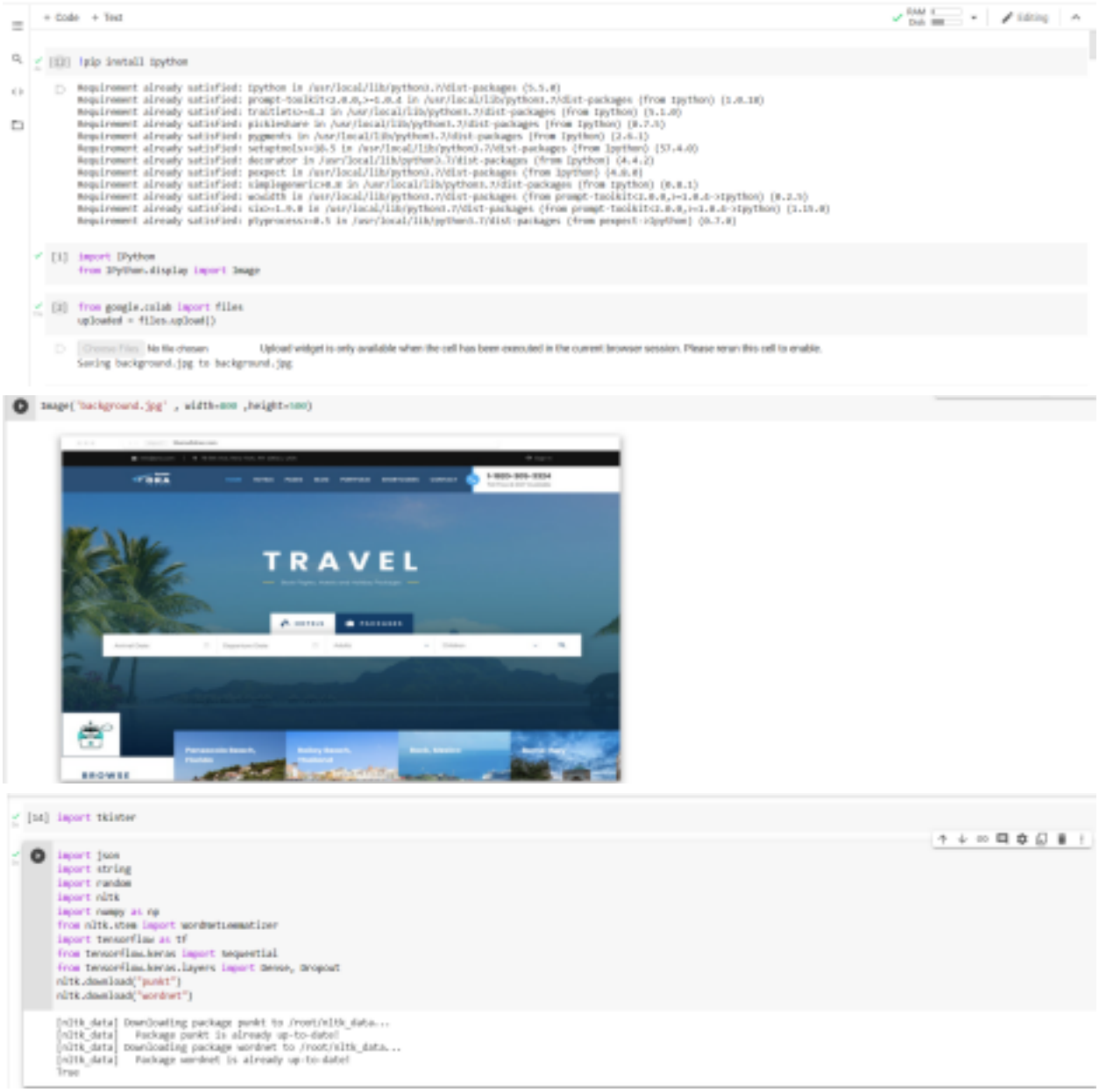
**Problem Solution**

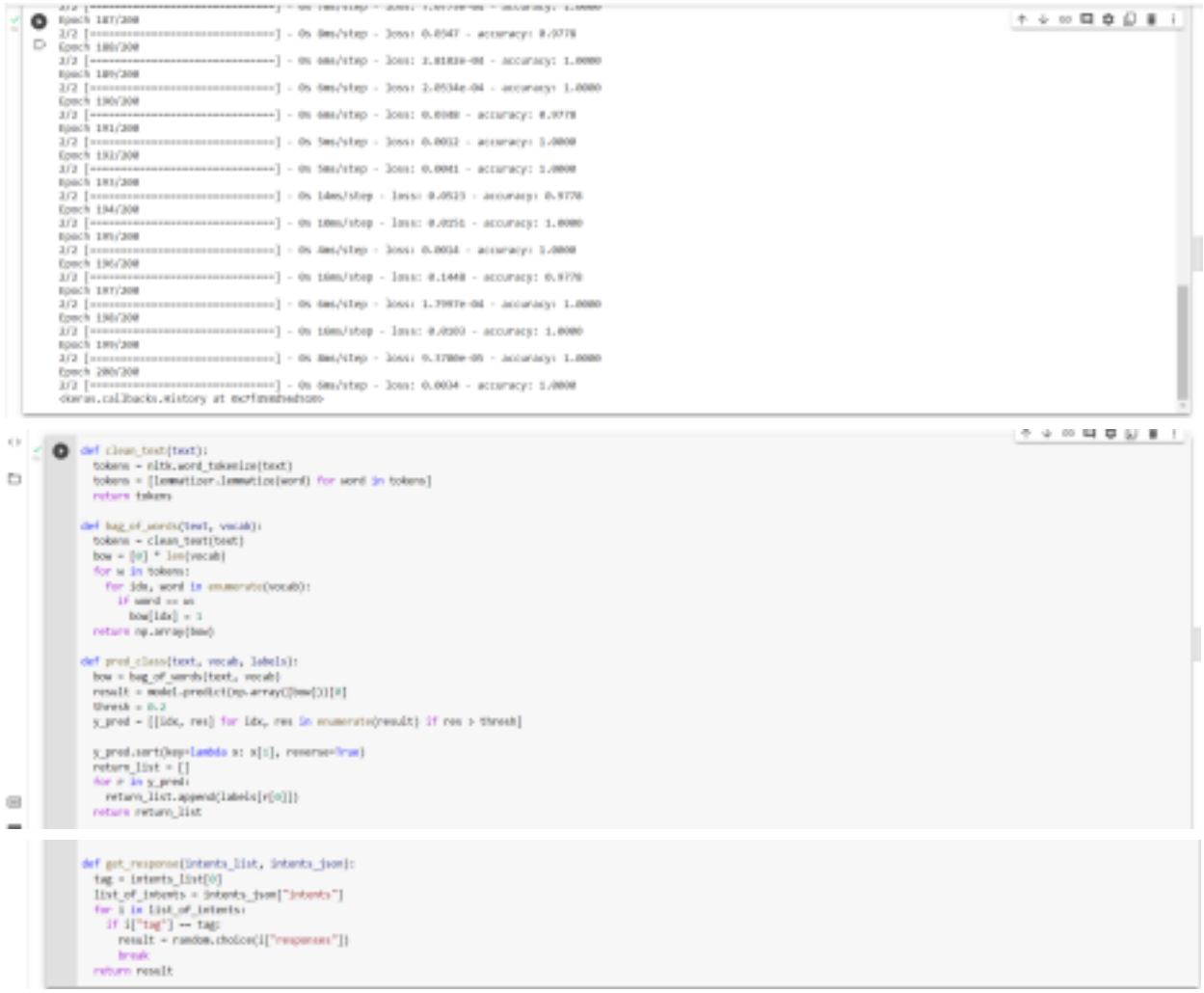
The aim of the project is to develop a travel buddy for the people to make them fall in love with the beauty of tourist spot.The travel bot interacts with the users and helps them visit the various viewpoints of the destination. The bot can tell them the nearby tourist places according to their current location.The bot will jump to the travel booking websites to help the user book hotels and

restaurants .The bot will be able to interact with the user about most liked foods and restaurants.It will suggest the events( cultural or others) happening in the city and provide information about entry passes.The bot will be able to provide directions to go to a place by giving information. Recently, a tourist had a medical problem while roaming around and they couldn't find a hospital so that bots will be able to give the contact information of nearby police and hospital authorities

**Program code**

**Following is code for each module in google colaboratory**





## Result/Observation

**Asking questions related to the chatbot :**


**Fig.no.1 screenshot of chatbot answers**

**Asking questions related to the tourist points :**

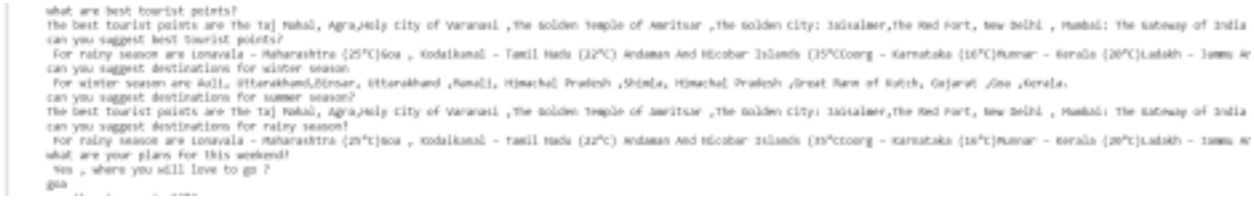



**Fig.no.2 screenshot of chatbot answers for tourist points**

**Asking questions related to the weekend plans or making plans :**


**Fig.no.3 screenshot of chatbot answers for making travel plans**

**Asking questions related to the client bookings :**


**Fig.no.4 screenshot of chatbot answers for bookings**

**Asking questions related to the flight details :**

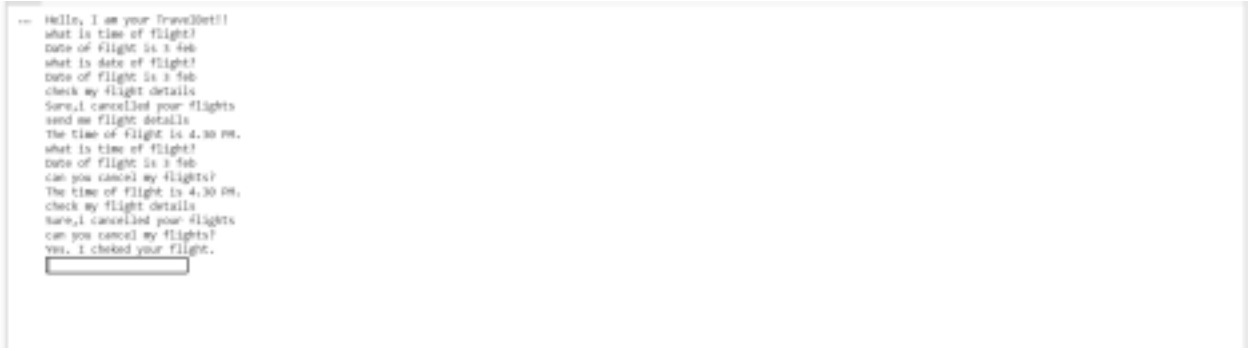



**Fig.no.5 screenshot of chatbot answers for flight details**

**Asking questions related to the flight weather or tickets:**


**Fig.no.6 screenshot of chatbot answers for weather information**

## Installations for google map :


**Fig.no.7 screenshot of installations**

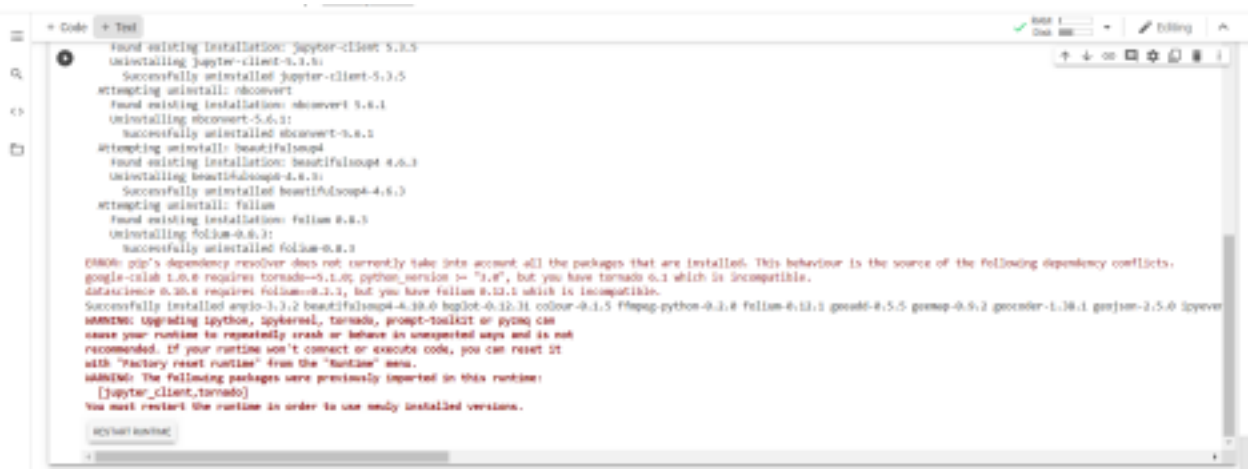



**Fig.no.8 screenshot of chatbot installations**

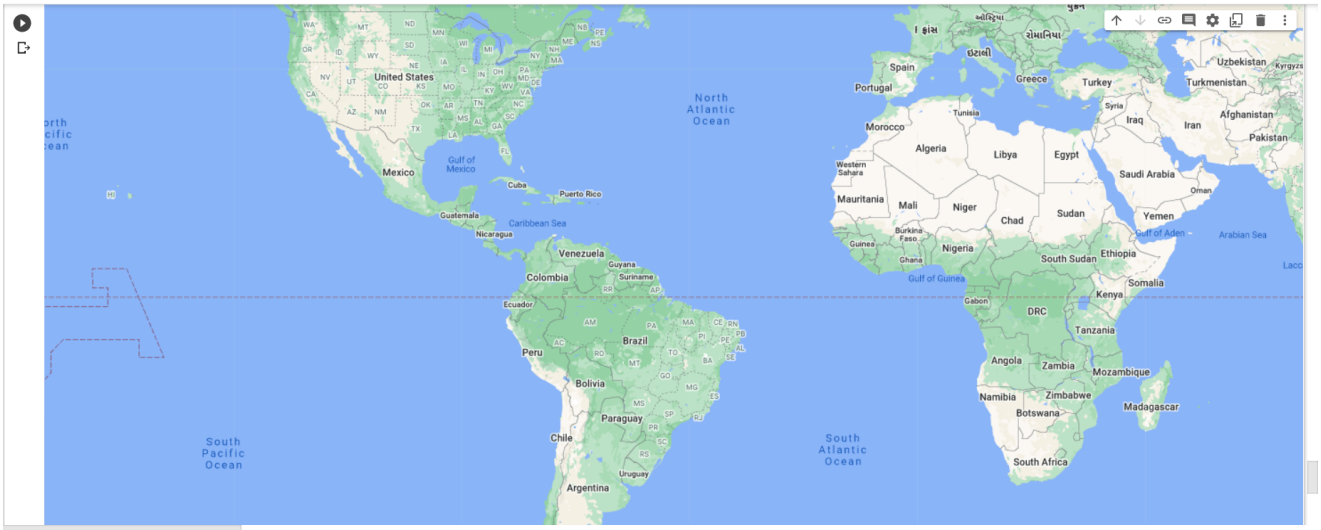



**Fig.no.9 screenshot of google map for locations**

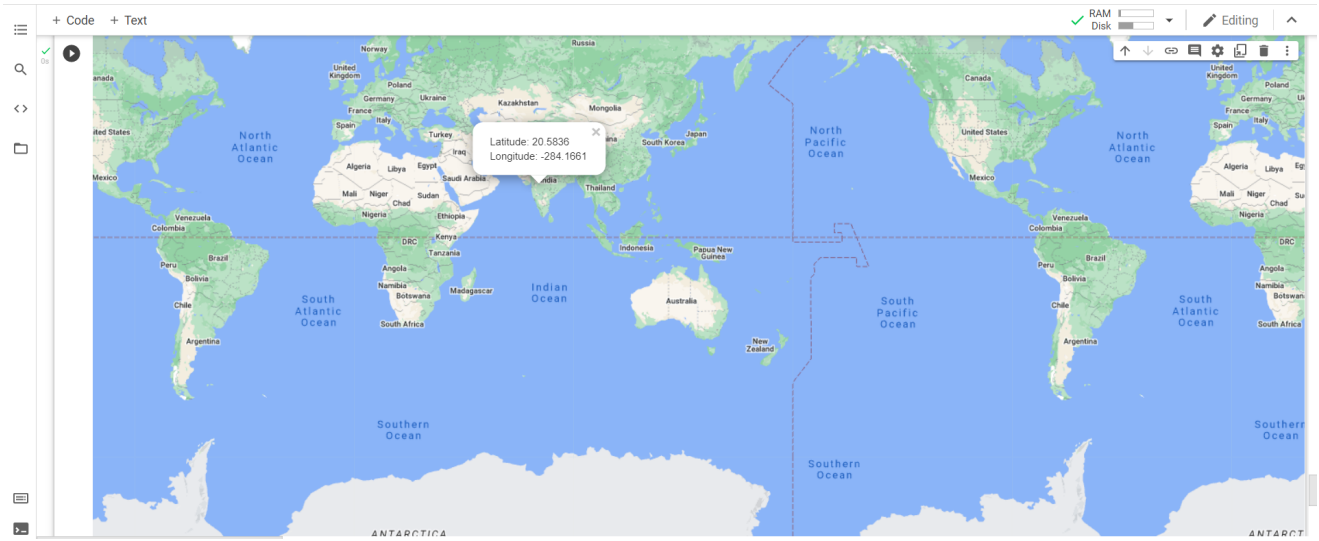



**Fig.no.10 screenshot of google map with longitude and latitude**


**Fig.no.11 screenshot of google map**


**Fig.no.12 screenshot of chatbot answers for greetings**

## Conclusion

Thus we conclude that the main aim of the project is achieved. The travel guidance chatbot interacts with the users to guide them . The chatbot gives detailed information about the users asked for tourist places with its viewpoints. It also guides directions while traveling. It gives answers to the users asked questions and travel related information or queries. We implemented chatbot for travel and tourist websites. We learnt the concepts of artificial and natural processing language(NLP) in detail. The requirements of the project are satisfied. The project is fully working properly.

**References**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