MAULANA AZAD NATIONAL
INSTITUTE OF TECHNOLOGY, BHOPAL

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

"ARTIFICIAL CONVERSATIONAL ENTITY"

Artificial Intelligence Project

Under the guidance of

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CSE-I

Abstract

The communication of potential students with a university department is performed manually and it is a very time consuming procedure. The opportunity to communicate with on a one-to-one basis is highly valued. However with many hundreds of applications each year, one-to-one conversations are not feasible in most cases. The communication will require a member of academic staff to expend several hours to find suitable answers and contact each student. It would be useful to reduce his costs and time. The project aims to reduce the burden on the head of admissions, and potentially other users, by developing a convincing chatbot. A suitable algorithm must be devised to search through the set of data and find a potential answer. The program then replies to the user and provides a relevant web link if the user is not satisfied by the answer. Furthermore a web interface is provided for both users and an administrator. The achievements of the project can be summarized as follows. To prepare the background of the project a literature review was undertaken, together with an investigation of existing tools, and consultation with the head of admissions. The requirements of the system were established and a range of algorithms and tools were investigated, including keyword and template matching. An algorithm that combines keyword matching with string similarity has been developed. A usable system using the proposed algorithm has been implemented. The system was evaluated by keeping logs of questions and answers and by feedback received by potential students that used it.

User interfaces for software applications can come in a variety of formats, ranging from command-line, graphical, web application, and even voice. While the most popular user interfaces include graphical and web-based applications, occasionally the need arises for an alternative interface. Whether due to multi-threaded complexity, concurrent connectivity, or details surrounding execution of the service, a chat bot based interface may suit the need.
Chat bots typically provide a text-based user interface, allowing the user to type commands and receive text as well as text to speech response. Chat bots are usually a stateful services, remembering previous commands (and perhaps even conversation) in order to provide functionality. When chat bot technology is

integrated with popular web services it can be utilized securely by an even larger audience.

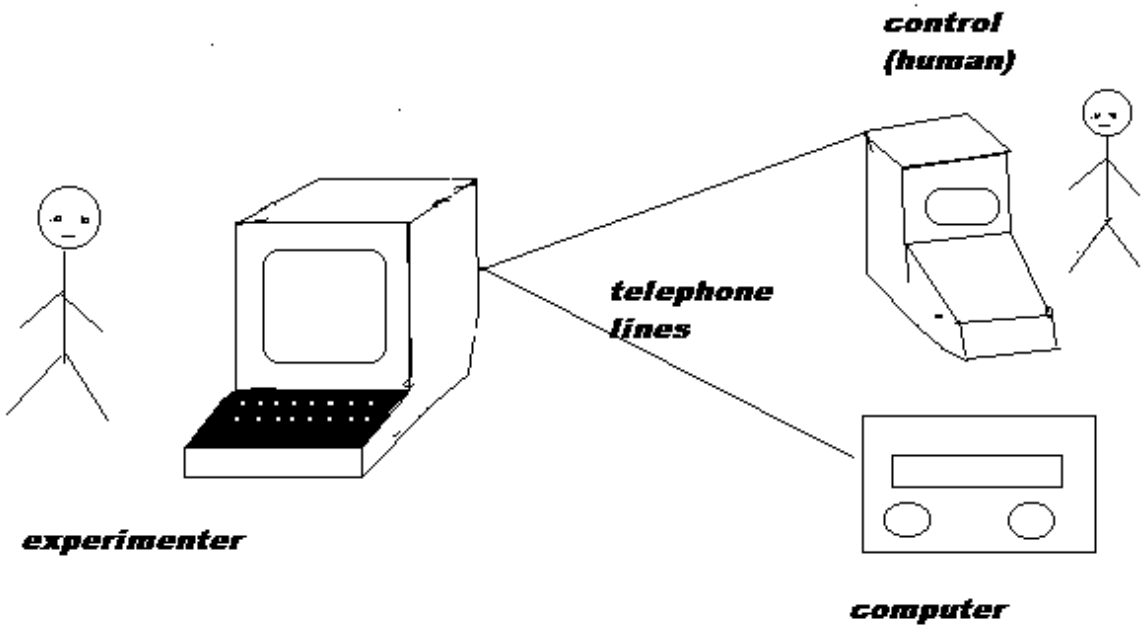
Introduction

Artificial Conversational Entity (also known as ChatBot) is a computer program which conducts a conversation via auditory or textual methods. Such programs are often designed to convincingly simulate how a human would behave as a conversational partner, thereby passing the Turing test. Chatbots are typically used in dialog systems for various practical purposes including customer service or information acquisition. Some chatterbots use sophisticated natural language processing systems, but many simpler systems scan for keywords within the input, then pull a reply with the most matching keywords, or the most similar wording pattern, from a database.

A CHATBOT is an artificial person, animal or other creature which holds conversations with humans. This could be a text based (typed) conversation, a spoken conversation or even a non-verbal conversation. Chat bot can run on local computers and phones, though most of the time it is accessed through the internet. Chat bot is typically perceived as engaging software entity which humans can talk to. It can be interesting, inspiring and intriguing. It appears everywhere, from old ancient HTML pages to modern advanced social networking websites, and from standard computers to fashionable smart mobile devices. Chat bots talk in almost every major language. Their language (Natural Language Processing, NLP) skills vary from extremely poor to very clever intelligent, helpful and funny. The same counts for their graphic design, sometimes it feels like a cartoonish character drawn by a child, and on the other hand there are photo-realistic 3D animated characters available, which are hard to distinguish from humans. And they are all referred to as “chat bots”.

Objective

The objective of this project is to build an automated system that defines the interaction between the user and the system (chatbot). It will act in a similar way how a human would behave as a conversational partner thereby passing the Turing Test. We built a chatbot to replace their enormous FAQ list. And it worked, mostly because web forms suck, they usually have a conversation rate of below 3%, while conversational interfaces average about 15-20% in capturing leads. The main purpose of chatbots is to support business teams in their relations with customers, by offering precision, personalization, efficiency and scalability.



Proposed Methodology

The process of creating a chatbot can be divided into design, building and analytics.

Design

The chatbot design is the process that defines the interaction between the user and the chatbot. We will define the chatbot personality, the questions that will be asked to or by the users and the overall interaction. It can be viewed as a subset of the conversational design.

Building

The process of building a chatbot can be divided into two main tasks: understanding the user's intent and producing the correct answer. The first task involves understanding the user input. In order to properly understand a user input in a free text form, a Natural Language Processing Engine shall be used. The second task may involve different approaches depending on the type of the response that the chatbot will generate.

Analytics

The usage of the chatbot can be monitored in order to spot potential flaws or problems. It can also provide useful insights that can improve the final user experience.

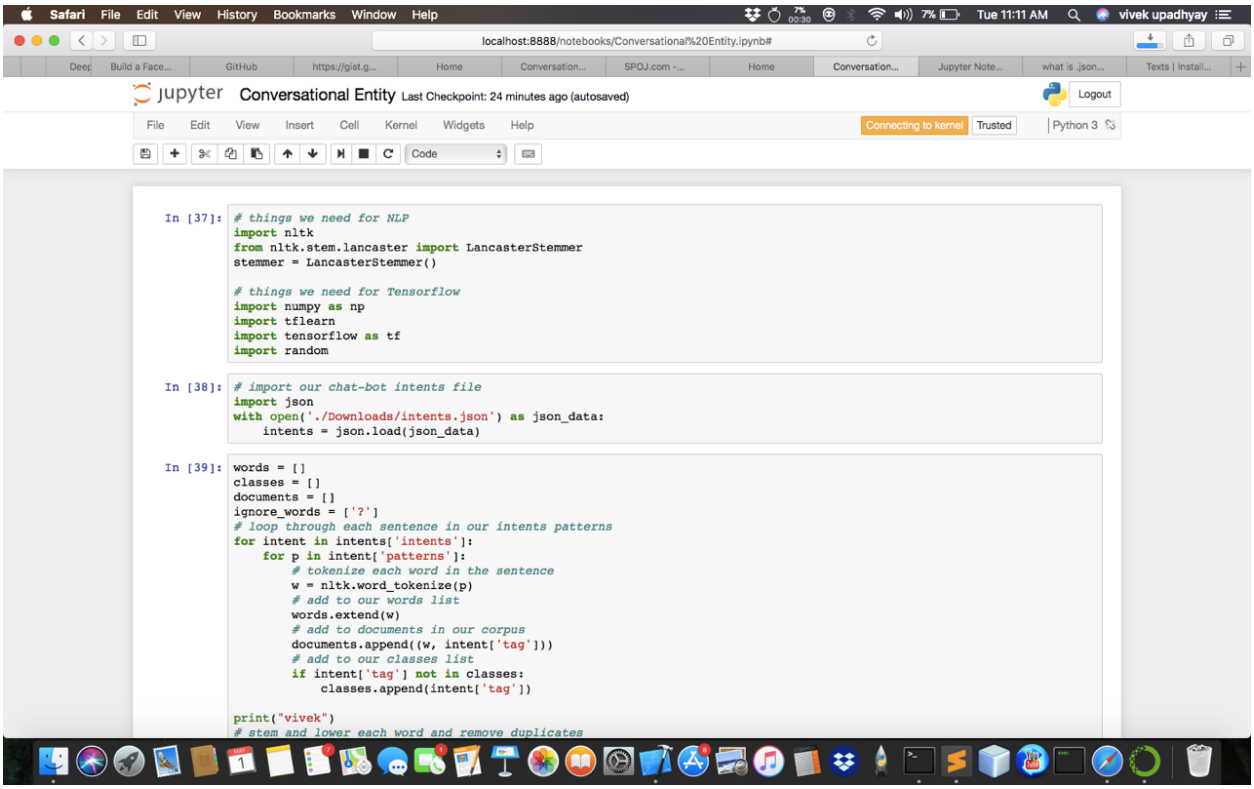
Proposed System

1. A Student bot project is built using artificial algorithms that analyzes user’s queries and understand user’s message.
2. This System is a web application which provides answer to the query of the student.
3. Students just have to query through the bot which is used for chatting.

4. Students can chat using any format there is no specific format the user has to follow.
5. The System uses built in artificial intelligence to answer the query.
6. The answers are appropriate what the user queries.
7. If the answer found to invalid, user just need to select the invalid answer button which will notify the admin about the incorrect answer.
8. Admin can view invalid answer through portal via login
9. System allows admin to delete the invalid answer or to add a specific answer of that equivalent question.
10. The User can query any college related activities through the system.
11. The user does not have to personally go to the college for enquiry.
12. The System analyzes the question and then answers to the user.
13. The system answers to the query as if it is answered by the person.
14. With the help of artificial intelligence, the system answers the query asked by the students.
15. The system replies using an effective Graphical user interface which implies that as if a real person is talking to the user.
16. The user can query about the college related activities through online with the help of this web application.
17. This system helps the student to be updated about the college activities.

Chatbot Development Tools

FrontEnd Interface Development – **JavaScript,CSS, HTML**
BackEnd Development – Python, PHP, MySQL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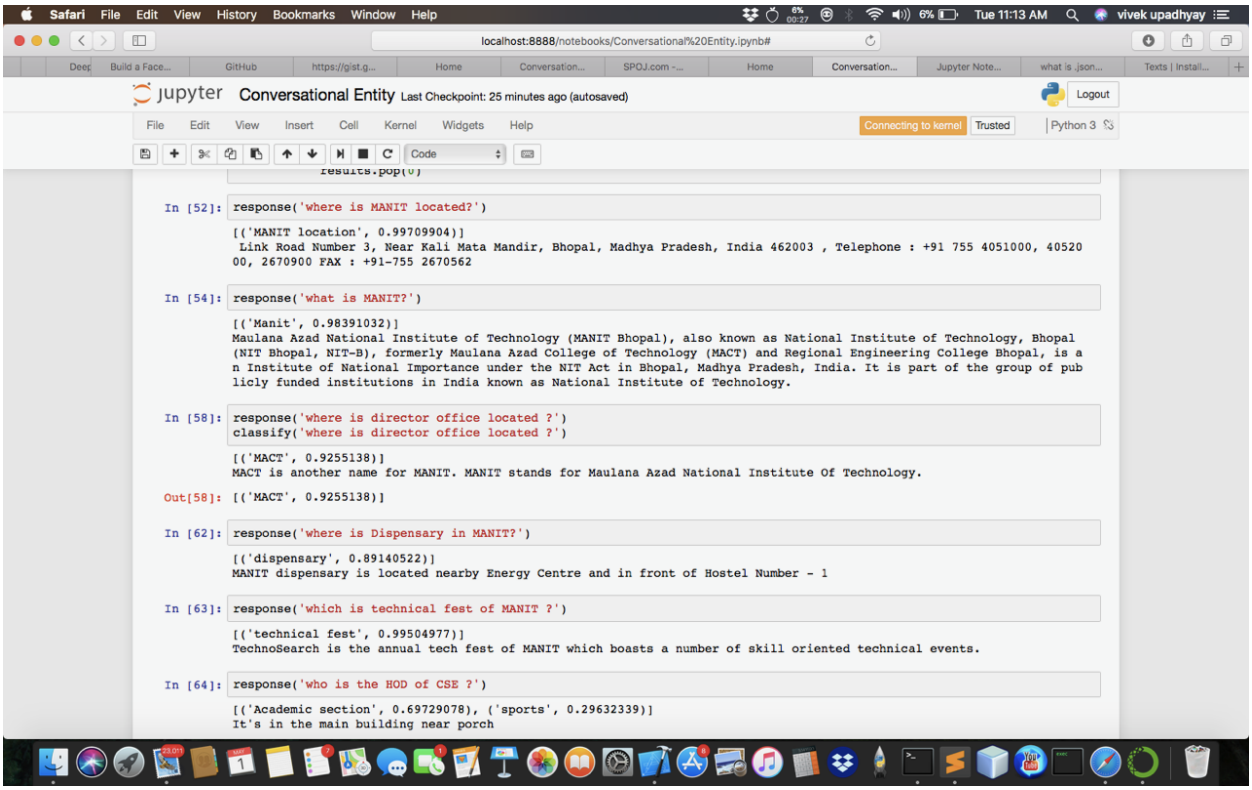
Python 3
Code
In [37]:
# things we need for NLP
import nltk
from nltk.stem.lancaster import LancasterStemmer
stemmer = LancasterStemmer()
# things we need for Tensorflow
import numpy as np
import tflearn
import tensorflow as tf
import random
In [38]:
# import our chat-bot intents file
import json
with open('./Downloads/intents.json') as json_data:
intents = json.load(json_data)
In [39]:
words = []
classes = []
documents = []
ignore_words = ['?']
# loop through each sentence in our intents patterns
for intent in intents['intents']:
for p in intent['patterns']:
# tokenize each word in the sentence
w = nltk.word_tokenize(p)
# 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'])
print("vivek")
# stem and lower each word and remove duplicates

Conclusion



The main objectives of the project were to develop an algorithm that will be used to identify answers related to user submitted questions. To develop a database were all the related data will be stored and to develop a web interface. The web interface developed had two parts, one for simple users and one for the administrator.

A background research took place, which included an overview of the conversation procedure and any relevant chat bots available. A database was developed, which stores information about questions, answers, keywords, logs and feedback messages. A usable system was designed, developed and deployed to the web server on two occasions. An evaluation took place from data collected by potential students of the University. Also after received feedback from the first deployment, extra requirements were introduced and implemented.

Advantages of Project

1. User does not have to go personally to college office for the enquiry.

2. This application enables the students to be updated with college cultural activities.

3. This application saves time for the student as well as teaching and non-teaching staffs.

Disadvantage

It requires active internet connection else error may occur.