

Development of a Mini Chatbot for Automating College Enquiry Services

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Abstract: We are forced to think whether the study of the development and implementation of a college enquiry Chabot that will enable college students quickly and easily learn to get their questions answered is possible. The Chabot was also constructed based on the machine learning and can receive text messages from users. What it means is that the time that students and staff spend on usual daily chores such as scheduling, billing, checking usual common questions goes down as school websites can be used as a place of how visitors ask questions, and the school respond to some of school related questions through chat bots. There are many benefits to the use of a Chabot survey in your college such as the data collection and analysis, less administration, easy communication, student satisfaction, use of personal connection, time management, saving cost, efficiency, and so on.

KEYWORDS: Admissions, Courses, Programs, Scholarships, Campus, Facilities, Faculty

INTRODUCTION:

the complexities of college life can still be a daunting task for students. From enrolling in courses to finding campus resources and scheduling appointments, the sheer volume of information can often overwhelm even the most organized individuals.

In order to respond to the challenge, colleges and universities are finding ways to simplify the enquiry process through the development of the College Enquiry Chabot service that will allow students to receive immediate and efficient help start. Chatbot is a set of computers which can understand the human talking or human talk (voice) and check it over and discuss with humans in the electronic media of devices likewise as of a remove human. From simple chatbot that respond to a sample, to the most advanced chatbot that is learning and evolving through collecting and sifting data and then give the most personalised experience for the user. But NLP and ML is used by robots, machines to determine if an expression of their intent through text was intended. The chatbot will go through a long process when the user enters his input, reads it, understands its meaning, dopes the value around the main user, through distribution and so on, and chooses the one of the responses of all the package as the most use full. NLP —Python which is going to give output to web browser source javascript (that is chatbot system) and to the College website as well. Our Chabot will make it easy and fast, from a students point of view, they will have direct answers to their questions.

In the Chabot format, which answers students with questions in a chat format, students feel like they are talking to a university employee. The content offered by the Chabot is as follows:

- Educational Information
- College Information
- Financial Aid Information
- Admission Procedure
- Fees
- There should be a program for each section and category.
- Faculty, alumni, location study, etc.

LITERATURE REVIEW:

I explained the above proposed idea by K. Bala, 'Chabot for college management system using A.I'. The Chabot is essentially supposed to talk to a human, a machine. We set it up to

inject itself into the machine because it knows about it, and now it can make its own decision is that the sentence that should answer to a question? Text based user interface specially designed with commands to be typed in and will get in text and text to speech response. Typically, chatbots are considered tasteful services that remember the last command and react accordingly. When we combine the popular web services with the chat bots technology, it can be used securely with wider audience. The content of the complaint has been parsed, tokenized, stemmed, and filtered with the help of natural language processing technologies [1].

So Amey Tiwari proposes a system which is called College Information Chat Bot System. Software application user interfaces include command line, graphical, web application and even voice. User interfaces are quite often graphical or web based application, and sometimes there is a need for an alternative.

Blog graphic design is something that very rarely is the character something as simple as that, a child can just draw it or even the badly drawn cartoon version of the same character, but it can also be an animated character, almost not human [2].

This will create the artificial algorithms to be applied in the college enquiry chatbots for understanding the query and analysits the user message from the user.

It basically means matching of a provided input sentence by user at the time when the user has provided a response to that sentence. So even if you are not physically present for the college, the chatbot can reply to the question about any college activity. The system responds to a user's answer to the question analysed next. The system uses Artificial Intelligence to answer these queries, which the user asks to. The system gives an effective graphical user interface as if it is a real human chatting with the user and the system then responds. A user can ask any question concerning the CSE department. Responding to any query that it receives and in answering for it. This is very useful for the student to know clearly about a particular college.

Methodology:

In here, this system will operate as below based on the basic algorithm.

Step 1: Start

2. Asking the user login questions.

Step 3: Preliminary research.

Notice the important words of the question

5. Retrieve the content and match it against keywords in knowledge base and respond accordingly.

What we do is, after that, we search for the services of the data center in 6th step in order to seek for the information which is necessary.

The content matching algorithm will use 7 keywords.

At Step 8, you then pass that question to the Chatbot, who takes over.

Step 9: Exit

Analysis of the study:

Python Libraries Used in Chatbot:

Flask:

Flask is commonly used in college enquiry chatbots for several reasons:

Web Interface: Flask allows you to create a web-based interface for your chatbot, making it accessible to users through a browser. This is particularly useful for college enquiry chatbots as students, prospective students, and other users can interact with the chatbot using a familiar interface.

HTTP Requests Handling: Flask provides an easy way to handle HTTP requests, which is essential for building web applications, including chatbots. With Flask, you can define routes to handle different types of requests (e.g., GET, POST) and process user inputs accordingly.

An integration of Chatbot with frontend: Yes, you can integrate this chatbot with frontend technology such as html, css, javascript to make your interface user friendly. It allows you to design forms, buttons, etc. for collecting user queries and displaying bot response in real time.

Scalability and Flexibility: Flask is lightweight and flexible, making it suitable for building chatbots of varying complexity. Whether you are creating a simple chatbot prototype or an elaborate bot with extra features, Flask is the best means of serving your requirements.

Web Technologies Integration: A large number of college enquiry chatbots exist on the college websites or on the already integrated college systems. Running in web browser or tool instead of command line. This makes python compatible with web frameworks like flask, django and many other, so its easy to have chat bot functionality in web app.

Installation of Flask

```

Administrator: Command Prompt
C:\Windows\System32>pip install flask
Collecting flask
  Downloading flask-3.0.3-py3-none-any.whl.metadata (3.2 kB)
Requirement already satisfied: Werkzeug>=3.0.0 in c:\users\lenovo\appdata\roaming\python\python312\site-packages (from flask) (3.0.1)
Requirement already satisfied: Jinja2>=3.1.2 in c:\users\lenovo\appdata\roaming\python\python312\site-packages (from flask) (3.1.3)
Requirement already satisfied: itsdangerous>=2.1.2 in c:\users\lenovo\appdata\roaming\python\python312\site-packages (from flask) (2.1.2)
Requirement already satisfied: click>=8.1.3 in c:\users\lenovo\appdata\roaming\python\python312\site-packages (from flask) (8.1.7)
Requirement already satisfied: blinker>=1.6.2 in c:\users\lenovo\appdata\roaming\python\python312\site-packages (from flask) (1.7.0)
Requirement already satisfied: colorama in c:\users\lenovo\appdata\roaming\python\python312\site-packages (from click>=8.1.3->flask) (0.4.6)
Requirement already satisfied: MarkupSafe>=2.0 in c:\users\lenovo\appdata\roaming\python\python312\site-packages (from Jinja2>=3.1.2->Flask) (2.1.5)
Downloading flask-3.0.3-py3-none-any.whl (101 kB)
----- 101.7/101.7 kB 615.1 kB/s eta 0:00:00
Installing collected packages: flask
Successfully installed flask-3.0.3

C:\Windows\System32>

```

Torch

A deep learning control technique using PyTorch, a deep learning framework, in a college enquiry chatbot might not as common as developing such a control technique in Flask or ChatterBot. Still, Pytorch can provide value in terms of the chatbot in more advanced applications or for certain functionalities.

Here are a few good reasons to incorporate PyTorch as a part of the college enquiry chatbot' s set of responses.

- i. NLU: PyTorch has powerful tools for natural language processing (NLP) tasks like BERT, GPT, etc and also pre-trained models are available. In particular, these models may help chatbot to better understand and interpret user queries, i.e. the model can know what these queries mean even if they are complex or need context that is beyond simple pattern matching.
- ii. Basic response generation: Rule based or even easier machine learning approaches such as Gibbs sampling can take care of basic response generation but we may want to train such models with PyTorch as well for producing more complex response based on context,

user intent and more. It could result in more natural and therefore more contextually relevant interactions with the users.

iii. Adaptability and personalization: deep learning models of PyTorch are trained or adapted to particular domains or datasets, We then utilize the chatbot to adapt to user preferences, past interactions or in other ways depending on contextual information. Adding this might be their way of growing the user experience on chatbot and also make it more intelligent and reactReaction.

iv. PyTorch can be used to build models that can be integrated with knowledge graphs or other large scale datasets of the kind of interests to college enquiries. This can result in the chatbot delivering better and more detailed course, faculty, research topics, and other aspects of the college.

One should also consider what PyTorch brings: flexibility, performance, options for research, and along with it comes deeper knowledge of deep learning and NLP than does ChatterBot or some rule engine for example.

Installation of Torch

```

C:\Windows\System32\cmd.exe
C:\Windows\System32\cmd.exe install torch
Collecting torch
  Downloading torch-2.0.0-cp312-cp312-win_amd64.whl.metadata (26 kB)
Requirement already satisfied: filelock in c:\users\lmonov\appdata\local\programs\python\python11\site-packages (from torch) (3.12.1)
Requirement already satisfied: typing_extensions<4.6.0 in c:\users\lmonov\appdata\local\programs\python\python11\site-packages (from torch) (4.10.0)
Requirement already satisfied: sympy in c:\program files\python11\lib\site-packages (from torch) (1.12)
Requirement already satisfied: networkx in c:\program files\python11\lib\site-packages (from torch) (3.3)
Requirement already satisfied: Jinja2 in c:\users\lmonov\appdata\local\programs\python\python11\site-packages (from torch) (3.1.3)
Requirement already satisfied: MarkupSafe in c:\program files\python11\lib\site-packages (from Jinja2->torch) (2.0.1)
Collecting intel-openmp<2021.* (from mlc-2021.4.0->2021.11.0->torch)
  Downloading intel_openmp-2021.4.0-py2.py3-none-win_amd64.whl.metadata (1.2 kB)
Collecting tbb<2021.* (from mlc-2021.4.0->2021.11.0->torch)
  Downloading tbb-2021.12.0-py3-none-win_amd64.whl.metadata (1.1 kB)
Requirement already satisfied: MarkupSafe<2.0 in c:\users\lmonov\appdata\local\programs\python\python11\site-packages (from Jinja2->torch) (2.0.1)
Requirement already satisfied: sympy<0.18 in c:\program files\python11\lib\site-packages (from sympy->torch) (1.12.0)
Downloading torch-2.0.0-cp312-cp312-win_amd64.whl (159.7 MB)
-----
100.0/100.0 MB 0.0 MB/s eta 0:00:00
Downloading mlc-2021.4.0-py2.py3-none-win_amd64.whl (228.5 MB)
-----
100.0/228.5 MB 0.0 MB/s eta 0:00:00
Downloading intel_openmp-2021.4.0-py2.py3-none-win_amd64.whl (3.5 MB)
-----
100.0/3.5 MB 0.0 MB/s eta 0:00:00
Downloading tbb-2021.12.0-py3-none-win_amd64.whl (206 KB)
-----
100.0/206.0 KB 0.0 MB/s eta 0:00:00
Installing collected packages: tbb, intel-openmp, mlc, torch
Successfully installed intel-openmp-2021.4.0 mlc-2021.4.0 tbb-2021.12.0 torch-2.0.0
C:\Windows\System32\cmd.exe

```

NLTK (Natural Language Toolkit)

One of the powerful NLP library of Python is Natural Language toolkit (NLTK).

NLTK is not the most typical choice for building a college enquiry chatbot as other libraries such spaCy or ChatterBot might be more convenient but still there could be occasions when it is useful.

Let me provide you with some reasons why you would want to use NLTK for a college enquiry chatbot:

- i. Text Processing and Tokenization: NLTK has built in functionality for texts processing such as stemming, lemmatizing, part of speech tagging and tokenization. Such capabilities are crucial to understand and analyze user queries in the chatbot context as the data is unstructured text.
- ii. Parsing and Analyzing Natural Language Syntax: The chatbot can use modules of NLTK to parse and analyze Natural Language Syntax so that the chatbot can extract the meaning and intent of the inputs from the user. Parsing trees and dependency parsing can be

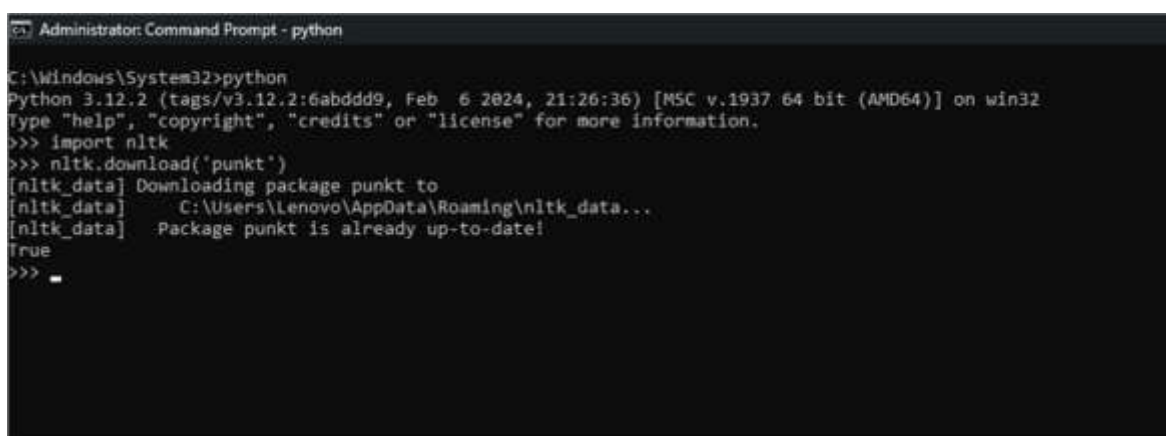
utilized to understand the grammatical structure of the sentences and determining important parts of the sentences such as the subjects, verbs and objects.

iii. NLTK includes tools for sentiment analysis which can be used to gauge user sentiment or feedback provided in users queries or responses. Knowing user sentiment will let the chatbot give the user the right response and have a more personalized user experience.

iv. Resources, Tutorials, etc.: NLTK has many other resources for learning about NLP concepts and techniques, as well as many tutorials and examples. Based on this, for developers or researchers looking to play around with NLP algorithms and test out of the box solutions, NLTK will be a good resource to learn and experiment on.

v. Naturally, there are tasks for which NLTK can be used independently but it can also be integrated with other libraries and frameworks: scikit-learn can be used for machine learning tasks or you can use Flask to build web interfaces. By doing this, you are free to use NLTK in combination with other tools to solve the problem altogether.

NLTK (Natural Language Toolkit)



```
Administrator: Command Prompt - python
C:\Windows\System32>python
Python 3.12.2 (tags/v3.12.2:6abddd9, Feb 6 2024, 21:26:36) [MSC v.1937 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> import nltk
>>> nltk.download('punkt')
[nltk_data] Downloading package punkt to
[nltk_data]   C:\Users\Lenovo\AppData\Roaming\nltk_data...
[nltk_data]   Package punkt is already up-to-date!
True
>>> _
```

Conclusion: Chatbot system is implemented to satisfy academic requirements. A knowledge based one but is capable to generate response from a chatbot. Here the responses are retrieved from flask and it is also responsible for the logics that have been triggered by user context matching. In this case, when some queries are being served on the chatbot Graphical User Interface. A query is searched for on the database. It does if the response already has been displayed to the user, but otherwise if it is not found in the database then it displays the response to the user and notify the admin about the missing answer and the response given to the user. Writing the missing response to the database can be done in website, by logging into the admin block.

Thus we have found out that College Enquiry chat bot is useful in directing students to the most appropriate and also relevant sources of information. The information for international candidates is relevant for questions like fees or academic stuff. In place of the students going to the college office in search of the information, it is at the students finger tips. It increases efficiency by reducing the need for work where human beings are not required. Sentiment Analysis is executed with difffbot and all the conversations are stored in the database while recognising the question interchanged by the user as being positive, negative or neutral.

is one of the simplest and most convenient way of transmitting information from a system to its user while not needing to get up, search, or navigate various web pages. You can easily ask a question in a simple language and you will immediately get the user proper response. This is a very handy as quick as can be interaction with the user.

Future scope of the study:

In the future, College Enquiry Chatbot can be expanded to have data of all departments, train the bot with different data, test it on a live website and based on the feedback received insert more training data to the bot.

Some of the features we can add to the bot is below.

These were through which the students could query the bot verbally and get answers.

integration with multiple channels such as phone call, SMS, and various social media platforms like Skype, Facebook and Twitter,

The bot will also be able to handle context as it goes along having a conversation with a student and be context aware and interactive queries.

integration with services such as password reset and courses Enrollment and

The second capability is the corresponding functionality where the bot has the capability of analyzing on the basis of users' sentiment and retraining the bot with human sentiments to further add empathy for the bot.

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