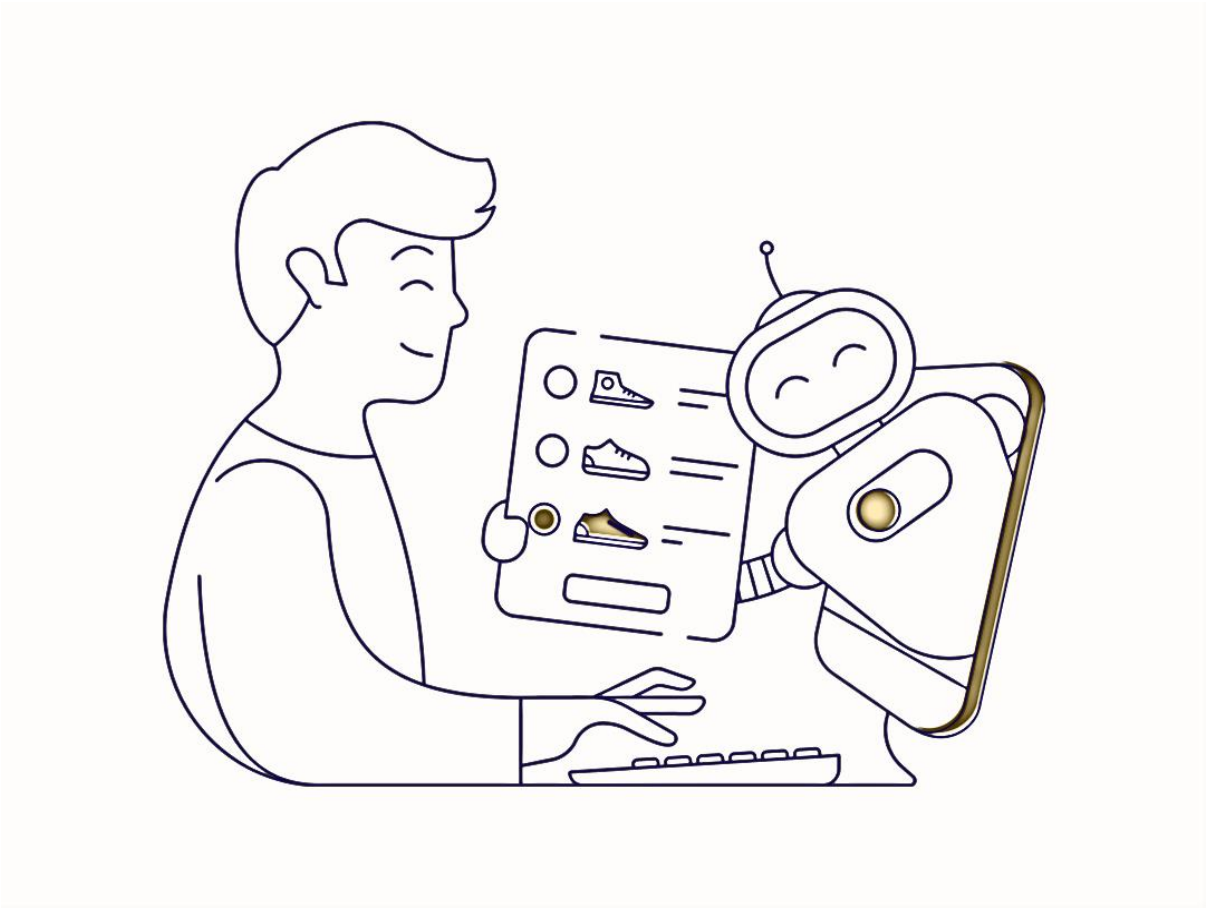

AI – EDUHELP CHATBOT APPLICATION

FOR EDUCATIONAL INSTITUTIONS

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Step -1: Prototype Selection

Abstract

India has vast number of Educational Institutions which produces millions of Under graduates annually in different types of fields. Yet many educational institutions in India have been following the traditional methods to accomplish certain works, which costs both human effort and wastage of time.

Some of the advantages which student/faculty members of the institution can experience if there is a service Chatbot are:

1. Information about courses
2. Accessing academic resources
3. Route maps of university
4. Easy information retrieval rather than queuing up at help desks etc.,

In this report we have highlighted the need for adopting AI chatbot applications in educational institutions as a means to overcome these challenges and optimize efficiency.

1. Problem Statement

What will you do? when you want to know the online mode fee payment process? you either seek help from your fellow student or you will go to the help desk in the college. which is a time taken process for a little information to automate this process and simplifying the task AI is useful.
Providing timely and accurate information, saving time and energy of students and faculty members, and efficient management of administrative tasks. which are currently lack in our educational institutions. These can be achieved by developing a **Conversational AI-Chatbot.**

2. Market/Customer Need Assessment

There are many cases in Indian educational institutions where students queue-up in lines for long hours to retrieve very small information at the help desks to overcome that situation AI-chatbots are the only solution.

- At the lower level, students and faculty members often find themselves struggling with the time-consuming nature of certain boring tasks.
- The implementation of AI chatbot applications in educational institutions presents an innovative solution to simplify tasks and reduce manual intervention.
- The motivation behind the usage of AI chatbot applications in educational institutions lies in their ability to respond in human-like manner.
- Students no longer have to wait in long queues or spend hours searching for answers, as the chatbot is available 24/7 to address their queries.

3. Target Specification and Characterization

i. 24/7 Helpdesk:

An advanced AI solution for educational institutions. It offers round-the-clock support, instantly addressing student queries, and guiding them on academic matters. Seamlessly integrating into the institution's digital ecosystem, our chatbot ensures quick and efficient problem-solving, enhancing the overall learning experience. Embrace the future of education with our intelligent chatbot, empowering students with instant assistance anytime, anywhere.

ii. Easy Assistance:

The chatbot should have access to a vast database of educational resources, including course materials, schedules, announcements, time tables, route maps of university, holidays, placements information and FAQs, and be able to retrieve relevant information quickly and accurately.

iii. Business Opportunity:

With round-the-clock assistance, the chatbot efficiently addresses student queries, providing instant support for admissions, course details, and academic inquiries. Its accessibility fosters a seamless student experience, enhances institutional reputation, and accommodates diverse time zones, catering to students nationwide. Moreover, its cost-effectiveness and scalable nature make it an attractive solution for educational institutions seeking to improve student engagement and satisfaction.

4. External Search (Information and Data Sources)

These are some of the sources I visited for more information and need for creating an AI-chatbot application.

https://www.researchgate.net/publication/340678278_A_Smart_Chatbot_Architecture_based_NLP_and_Machine_Learning_for_Health_Care_Assistance

https://yellow.ai/chatbots/importance-of-ai-chatbots/

How to Deploy a LangChain App as an API | by Akshay Ballal | Jun, 2023 | GoPenAI

https://realpython.com/python-web-scraping-practical-introduction/

There is necessary information mentioned in these articles to create a chatbot and deploy it in the required platform using API’s.

5. **Benchmarking**

The traditional methods to retrieve information regarding any update in the university/college/educational institution is to queueing up at the help desk and standing long hours to know only little information which can be done in a simple way. The usage of conversational chatbots in educational institutions not only saves time but also promotes efficiency and convenience.

The Conversational Chatbot is not any benchmark to any traditional methods followed in present educational institutions, but it is a new way of updating the old methods with present technology to level up the personal experience of students or staff by saving their energy and time on streamline process.

6. **Applicable Patents**

https://patents.google.com/patent/US20140279050A1/en

https://fabricofdigitallife.com/Detail/objects/5806

https://www.researchgate.net/publication/339460281_Legal_Issues_of_Intellectual_Property_Rights_in_Disrupted_Technologies_Era_Chatbots_and_Conversational_Computing_Platforms

7. **Applicable Regulations**

- Gathering information in the form of documents.
- Extracting insights from documents, replying accurately according to the question by user.
- Storing information in platforms like google cloud.
- Applying ML algorithms, Deep learning techniques for more accuracy.

8. **Applicable Constraints**

- Difference of procedures and Timetables for Institution to Institutions.
- Employees need to work uniquely for institution to institution according to their requirements.
- Lack of technical departments in some institutions.

9. **Business Opportunity**

We are all well known about the Educational Institutions situations and their growth in India. It is bigger than what we think and expanding day to day. In these automation needs to simplify the educational needs as far as possible to make the students stay up to date with the advanced generation, the institutions are seeking to adopt these advanced technologies wherever possible.

As per present stats there are nearly 43,796 higher educational institutions in India, over crores of students are pursuing under graduation in different fields and thousands different educational institutions. Every student once in every time is grappled for the lag of services provided by the educational institutions. The business opportunity for the company lies in managing the time difference by using the present technology which is appreciable by almost every student and administration.

There are multiple business dimensions in the education industry where chatbots are gaining popularity, such as online tutors, student support, teacher's assistant, administrative tool, assessing and generating results. In this article, we will analyse all the possible applications of educational chatbots, the benefits of chatbots in education and build a future perspective about chatbots in the education industry.

By implementing an AI chatbot, the company can provide instant and round-the-clock assistance to students, ensuring their queries are addressed promptly, enhancing their overall experience. The company can establish itself as a leader in the industry, opening doors to new partnerships, collaborations, and business opportunities.

10. Concept Generation

ChatGPT took the world by storm by exposing a powerful language model with a new interface - chat. There are several components that go into building a chatbot.

The model - you can construct a chatbot from a normal language model or a Chat Model. The important thing to remember is that even if you are using a Chat Model, the API itself is stateless, meaning it will not remember previous interactions - you have to pass them in.
PromptTemplate - this will guide how your chatbot acts. These can be used to give your chatbot some character.
Memory - as mentioned above, the models themselves are stateless. Memory brings some concept of state to the table, allowing it to remember previous interactions.

There are two components: ingestion and question-answering.
Ingestion has the following steps:

i. Pull html from documentation site.
ii. Load html with LangChain's ReadTheDocs Loader
iii. Split documents with LangChain's TextSplitter
iv. Create a vectorstore of embeddings, using LangChain's vectorstore wrapper (with OpenAI's embeddings and FAISS vectorstore).

Question-Answering has the following steps, all managed by ChatVectorDBChain:

i. Given the chat history and new user input, determine what a standalone question would be (using GPT-3).
ii. Given that standalone question, look up relevant documents from the vectorstore.
iii. Pass the standalone question and relevant documents to GPT-3 to generate a definitive answer.

Creating a Chat bot

Install Dependencies

In [100]:
```
%pip install langchain
```

Importing Libraries

In [101]:
```
from langchain import OpenAI
from langchain.chains import ConversationChain
from langchain.chains.conversation.memory import ConversationBufferMemory, ConversationSummaryMemory
from langchain.callbacks import get_openai_callback
import os
```

Defining Conservative System

In [102]:
```
def track_tokens_usage(chain, query):
    with get_openai_callback() as cb:
        result = chain.run(query)
        print(f'Total tokens: {cb.total_tokens}')
        print(f'Requests: {cb.successful_requests}')

    return result

```

In [103]:
```
llm = OpenAI(
    temperature=0,
    openai_api_key=os.environ["OPENAI_API_KEY"],
    model_name="text-davinci-003"
)
```

Responding Function

```
In [116]: 1 track_tokens_usage(conversation, "What are the cons of sharding?")
```

```
Total tokens: 1261
```

```
Out[116]: ' The main con of sharding is that it can be difficult to implement, as it requires a significant amount of coordination betwee
n the different shards. Additionally, sharding can also lead to increased complexity, as the network needs to be able to handle
multiple shards. Finally, sharding can also lead to increased security risks, as the network is more vulnerable to attacks if o
ne of the shards is compromised.'
```

Conservative Memory of ChatBot

```
In [113]: 1 print(conversation.memory.buffer)
```

```
Human: My interest is to explore the options of scaling Ethereum
AI:  That's an interesting topic! Ethereum is a decentralized platform that enables developers to create and deploy decentraliz
ed applications. It is built on a blockchain technology, which allows for secure and transparent transactions. To scale Ethereu
m, there are several options available. One option is to increase the block size, which would allow more transactions to be pro
cessed in each block. Another option is to use sharding, which would split the blockchain into multiple shards and allow for mo
re transactions to be processed in parallel. Finally, there is the option of using off-chain solutions, such as sidechains or s
tate channels, which would allow for transactions to be processed outside of the main blockchain.
Human: Could you please elaborate more on sharding?
AI:  Sure! Sharding is a process of splitting the blockchain into multiple shards, each of which contains a subset of the total
data. This allows for more transactions to be processed in parallel, as each shard can process its own transactions independent
ly. Additionally, sharding can help reduce the amount of data that needs to be stored on each node, as each node only needs to
store the data for its own shard. This can help reduce the cost of running a node, as well as improve the scalability of the ne
twork.
```

11. Concept Development

When creating a chatbot, you design the logic of a chatbot. To then bring it to life so your users can interact with it, you must deploy it on one of the media, which include Web pages, Facebook Messenger, WhatsApp and Twilio phone numbers. A key advantage of SmartBot360 is that you can deploy the same bot to multiple media to meet the users on their favorite medium.

The easiest way to deploy a bot is to follow the prompts right after creating a bot. First, go to CHATBOTS page and load your bot. Then click on "Save&Deploy" button as shown below.

More ways of deploying the chatbot is explained in this article: https://smartbot360.com/documentation/deploy-chatbots#

12. Final Product Details

Our product deals with from all minutes to maximum tasks done by the college administration. The product provides information for queries like fee payment process, attendance percentage, Marks list, route maps of the college to providing educational videos on a chapter whenever the students get any doubts.

Though this AI technology needs human intervention for required information and needed to update the current and trending information took place in the college/University/Educational Institution to make the user experience more engaging with the AI-Conversational chatbot.

Most AI chatbots employ a text-based interface where users can type their queries or commands in a chat-like format. The UI typically consists of an input text box where users can enter their messages and a message display area where the chatbot's responses are shown.

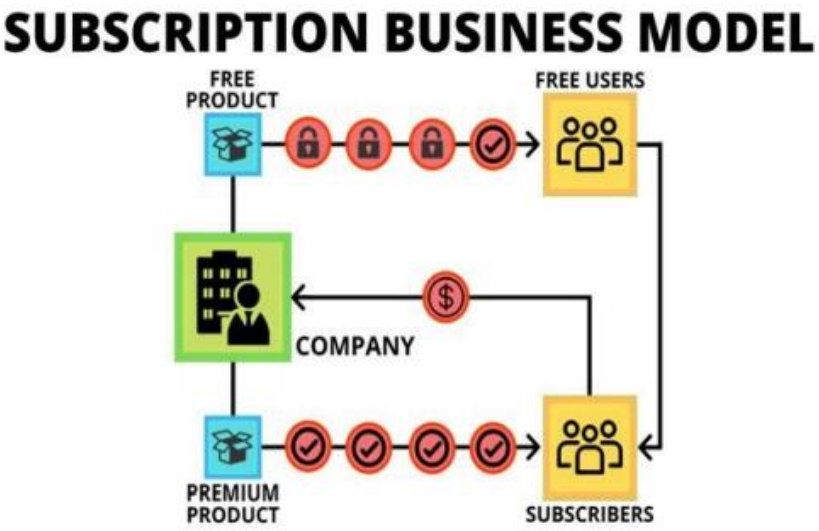
Step-2: Prototype Development

GitHub Link: https://github.com/Sinha532/ChatBotApp

By leveraging an app prototype in a GitHub repository, you join a community of like-minded developers, sharing ideas, and collectively crafting a robust and innovative app. This collaborative approach accelerates the development process, fosters knowledge sharing, and creates a dynamic ecosystem that continually evolves and improves the app prototype.

Step 3: Business Modelling

For this service, it is beneficial to use a Subscription Based Model, where initially some features will be provided for free to engage customer retention and increase our customer count. Later it will be charged a subscription fee to use the service further for their business. In the subscription business model, institutions pay a fixed amount of price on fixed time intervals to get access to the product or service provided by the company. The subscription plan is charged for whole institution once the Education institution subscribed for monthly or yearly plan then the students from that college can access the application and can use the services provided.



Step 4: Financial Modelling

To develop a financial modeling equation for the application, we can calculate the total revenue and expenses based on the given information.

Let's assume:

Number of students in the college = S

Charge per student = Rs.2

Number of NLP engineers = N

Number of app developers = A

Financial Model Equation:

Total Revenue = Charge per student * Number of students

= Rs.2 * S

Total Expenses = (Salary of each NLP engineer * Number of NLP engineers) + (Salary of each app developer * Number of app developers)

Now, we need to provide the salary information for each NLP engineer and app developer in order to calculate the total expenses.

Let's assume:

Salary of each NLP engineer = Rs.X (per month)

Salary of each app developer = Rs.Y (per month)

Then, the Total Expenses = (Rs.X * N) + (Rs.Y * A)

The Profit (or Loss) is calculated as:

Profit = Total Revenue - Total Expenses

= (Rs.2 * S) - ((Rs.X * N) + (Rs.Y * A))

With this equation, we can calculate the projected profit or loss for the application based on the number of students in the college and the number of NLP engineers and app developers employed. We can also perform sensitivity analysis by varying the student count and salaries to understand how changes in these variables would impact the financials.