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EDUBOT (chatbot)

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Abstract - *Due to outbreak of Covid 19 pandemic, work from home has been a major adaptation for everyone. Educational institutions in all the countries are unable to teach face-to-face. Digital education undoubtedly experienced a boost in 2020 onwards. Educational institutions are supposed to provide digital information to their students and assist them by resolving their queries & issues. Chatbots can provide very good support in education domain. Student have to attend lectures and study on online platforms. So, they have to keep many applications on their phones for multiple tasks. Our project will help students and teachers to cope up with this situation and also the project will help students to ease their work where they can find the required all tasks in one application such as video recorded lectures, online lecture links, track of submissions, making notes, Query solving, attendance record track. The user can directly communicate with our chat-bot regarding their issue/query and the chat-bot will redirect them to the specific page asked by them. . Chat-bots are still relatively new, but they're becoming extremely popular amongst various fields. This paper aims at providing both teachers and students an easy, space saver method for their electronics regarding their academics. The project will be done in python using specific libraries and tkinter.*

Key Words: **Pandemic, chat-bot, online, education, python, tkinter, academic.**

1.INTRODUCTION

The eruption of the COVID 19 pandemic has caused many disruptions in human life. It is very important for people to look out for their health and the best way is by staying home. The effects of this have altered the patterns of work routines. People had to start working from home to keep themselves safe while continuing their professional lives. Also, due to pandemic schools, colleges, and institutions are closed. If colleges and schools are opened then there is a high risk of more people getting infected. But, as we cannot prolong education, it is necessary to complete academics without getting infected. All the tasks that were performed by students physically are now to be performed online. Previously they had to be physically present for lectures, submissions, exams, etc. Since pandemic evolution, it is now not possible. Now students have to attend lectures online, submit their work, give exams & other different academic task. In school/colleges, teachers & instructors would help and guide students. But now it is not possible for them to coordinate with each student. So a coordinator is required who will help the students for their tasks. A chatbot is the best solution for it. Basically, a human bot can do this work easily and efficiently. A chatbot is the new era of information systems capable of communicating and performing actions that are similar to humans. However, a chatbot is used for interaction with people. They are automated conversations used to interact with clients or customers like humans. But having a chatbot with additional features will make it more efficient in use. Chatbot will be a medium between teachers and students by helping them in academic tasks.

Our Edu-Bot(chatbot) in addition will provide a schedule, attendance record, query solving, notes, lecture links, recorded lectures, and submission dates.

1.1 Objective

The Objective of this project is to create a solution for students based on the requirements of their Day-to-day academic activities i.e., online lecture links, lecture recordings, making notes, keeping attendance record, keeping track of submissions to do, query solving, etc. With the help of this chatbot, students can do these multiple tasks in one application. Chatbot is also beneficial for teachers as they can monitor student's attendance and inform important academic details to students by using this chatbot.

1.2 Project Scope

This project will be developed in python language and will use various packages, libraries like Numpy, NLTK, Keras, JSON, PIL, pymysql, OS, TensorFlow. The chatbot will be built on Tkinter GUI. Chatbot is trained using patterns and their responses. With the help of this, chatbot will give the responses to the user's query. Along with answering the query, it will also have additional features which will help the user in academic tasks. The features will be such as making notes, providing lecture links, have recorded

lectures, display timetable / schedule, provide attendance record.

2. LITERATURE REVIEW

Chat-bots is a type of computer program which is used by many industrialists for solving the queries of their users via text messaging or voice-based. It is an Artificial Intelligence program that conducts conversations with user. The first chatbot was invented by an MIT professor in the 1960s. Its functioning was based on pattern-matching and substitution methodology to simulate the conversation. It was named ELIZA. ELIZA was designed in a way that is used to mimic human conversation. PARRY was the second chat-bot created in the year 1972 by an American psychiatrist to simulate the disease. Jabberwacky, Dr. Sbaitso, A.L.I.C.E, SmarterChild are the other few chat-bots created during the initial years of technology with the help of Artificial Intelligence. B. Framework is - A software framework which provides a predefined set of functions. These functions are useful in building an efficient and required chatbot.

Below are some popular chatbot frameworks:-
[1]Wit.ai - provided by Facebook, wit.ai is a cloud-based framework to create automation for wearable devices. SDK's available at wit.ai are: Node.js, Python, Ruby.
[2]Dialog flow - Powered by Google's Machine learning, Dialog flow is used to create text conversational or voice-based conversational interfaces for your bots and application. SDK's available at Dialog flow are: PHP, Go, Java (Maven), Ruby (Gem), Python, C, Node.js
[3] Pandorabots - It is an Infrastructure as a service platform. It uses Artificial Intelligence markup languages and also Artificial Linguistic Internet Computer Entity (A.L.I.C.E), which is an NLP chatbot. SDK's available at Pandorabot are: PHP, Go, Java, Python, Ruby, Node.js.
[4] RASA Stack - It is an open-source framework based on ML. It works on two main integrands – Rasa NLU(uses NLP) and Rasa Core(uses inputs given by intents and entities in json files). Some of features in RASA Stack are: Manage Contextual Dialogues, Recognize Intents, Exact Entities, Full Data Control, Connect Your APIs, Custom Models
[5]Chatterbot - It works on a library created in python. It is language-independent which allows the chatbot to get trained in any desired language. It automates the flow of conversation through Machine Learning. SDK: Node.js This project is developed by using a contextual chatbot framework.

3. PROPOSED METHODOLOGY

This project will be developed in python language. It will use packages and libraries like nltk, numpy, json, pickle, PIL, keras and tensorflow. All these libraries will be used for creating the heart of our project. For the chatbot frontend we will use Tkinter GUI and for backend we will use mysql database. The project is based on Deep Neural Network where we will train the chat bot using tags, patterns and responses in json file. The patterns will contain the questions/queries which user(student) can ask and responses contain info to be given. During training of chatbot, tensorflow determines all the words, tags used in the patterns and then deep neural network will calculate the tag probability based on the user input. ML, will thus match the best tag with the intents patterns and give the correct responses associated. In this way, the model is trained and created. After model creation, when the user will ask a query or question to the bot a best accurate response will be given to the user. The chatbot will be trained in such a way that it has all the information of academic details that student wants to know. It would provide lecture details, online lecture links, schedule, assignments & projects to be submitted, important notices, etc. The chatbot will use tkinter for graphical user interface. To implement the features in Chatbot we will use tkinter libraries. We will create a login and register page which will be connected to mysql database. Xampp is local web server on computer to connect database and login/register pages with user authentication We will develop a menu bar in chatbot which has options to select such as file, lecture, attendance, timetable. The file section contains new , notes, exit as sub sections in drop down form. Notes is a subsection where students can write notes, clear & get notes or go back to chat bot main page. Exit will close the chatbot window. Lecture section contains recorded lectures and lecture links as subsections. All the recorded lectures will be shown in recorded lecture section and all the lecture links will be shown in lecture links subsection. For recorded lecture, we will use OS library to get the file from the location where it is stored. This library is used to create a connection of the application and the mp4 player of the client-side device to play the recorded lectures. Timetable will have the schedule of all the classes. Tracker will have the attendance record of students which is determined using Open CV library and facial recognition. The record of attendance will be kept in a .xlsm file(macro-enabled spreadsheet) and the attendance will be displayed as required. These all pages will be internally imported and connected to each other using functions.

3.1 Training Datasets

Conversational intents are stored in json file which contains tags, patterns, responses and context. Neural network calculates tag probability from the user input. ML matches the best tag from the already defined patterns with the user input. We can change the intents based on our requirement. To train a chatbot it is important to load the import libraries in train chatbot python file. We will load the json file in the train chatbot python file. Then we organize the documents, words and classification classes. A list of sentences, stemmed words and classes will form. Tensorflow will then use neural network to train the list of intents and form a pickle file which will be used in train chatbot file. Classification function obtains user input and runs through tensorflow to get high probability and accuracy results . The result gives matched tag and accuracy. If the accuracy is high of the user input with intents tag, then the responses associated with that pattern is given. In other words, if the user query matches with the pattern in intents file then pre-defined response for that pattern will be provided by Edubot.

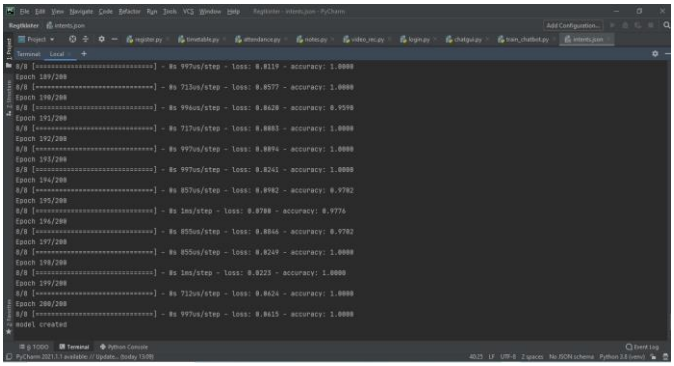

Fig-1: Snapshot of Edubot(chatbot) training and model creation.

4. RESULTS

The EduBot is a type of contextual chatbot trained to interact with the user (students) regarding academic tasks. The below snapshots gives the interaction of chatbot and user. The authentication pages and Mysql database are connected using Xampp. The chatbot uses tkinter and python libraries to create various pages that are features of chatbot.

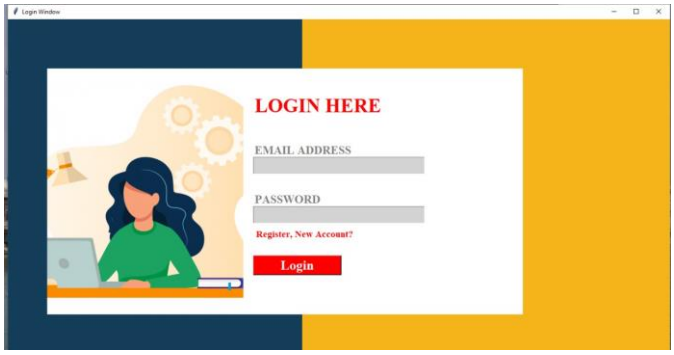

Fig-2: Login Page

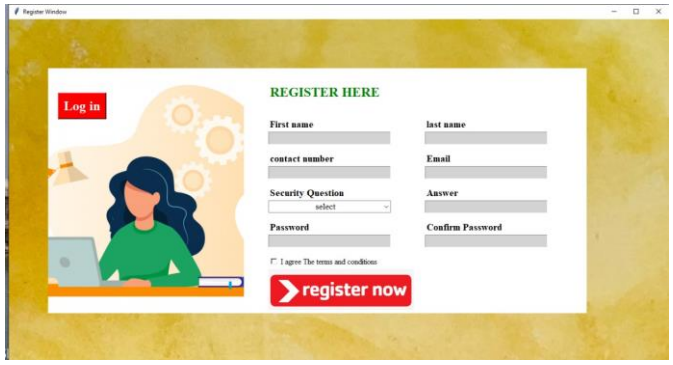

Fig -3: Register Page

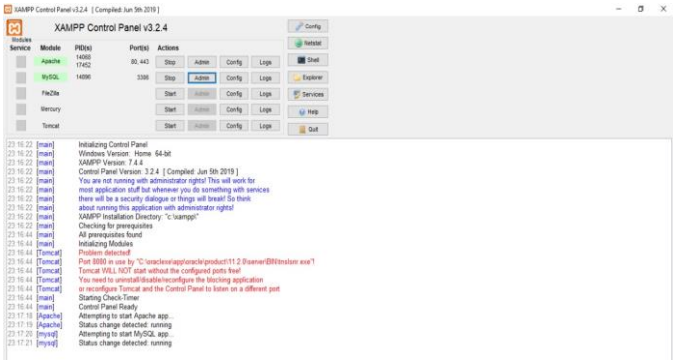

Fig-4: Xampp for Database connection with authentication pages.

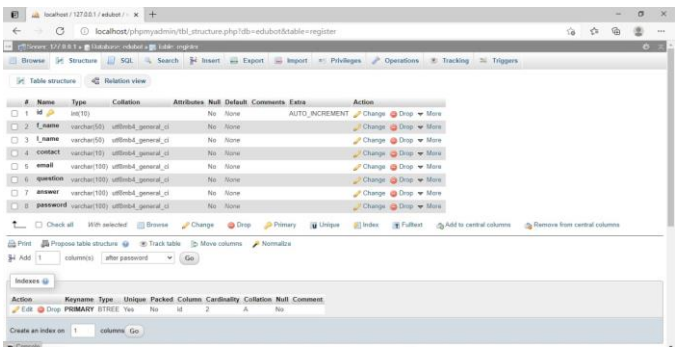

Fig-5: Shows the structure of database mysql phpMyAdmin localhost

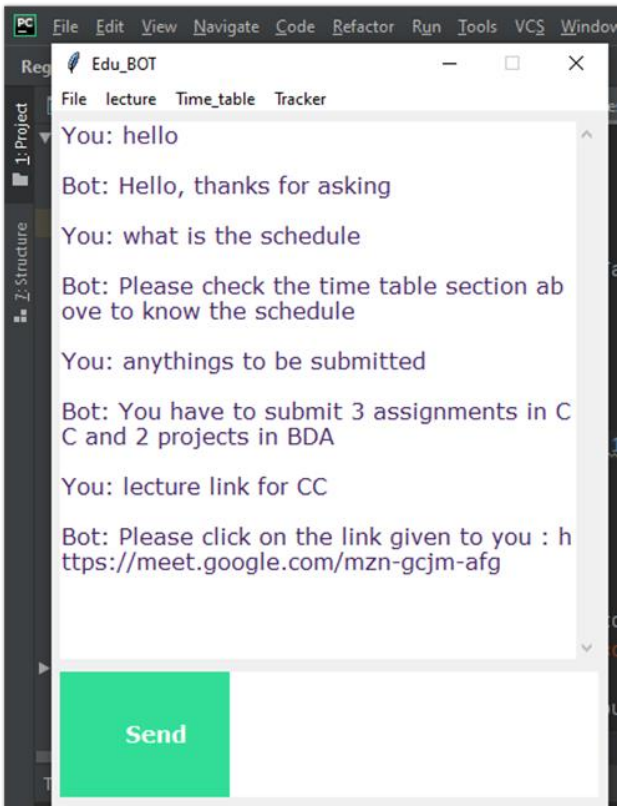

Fig-6: Edubot Interface displaying conversation between user and chatbot. It also shows menu bar with additional features of chatbot.

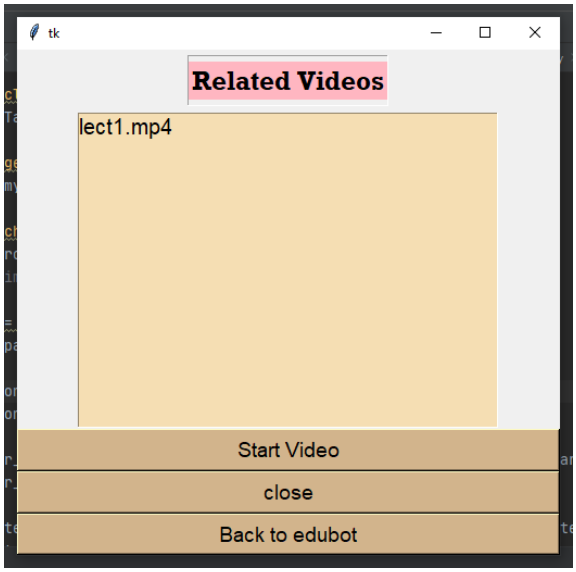

Fig-7: After clicking the lecture menu the EduBot will direct recorded lecture page as shown.

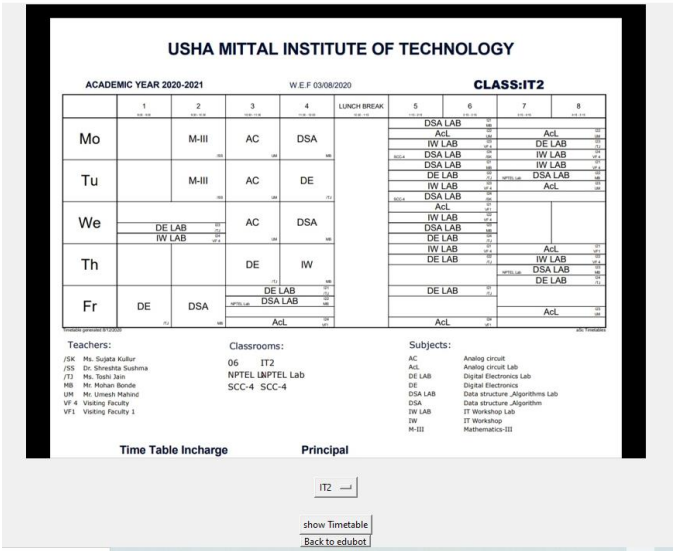

Fig-8: Display of timetable when user clicks on timetable menu

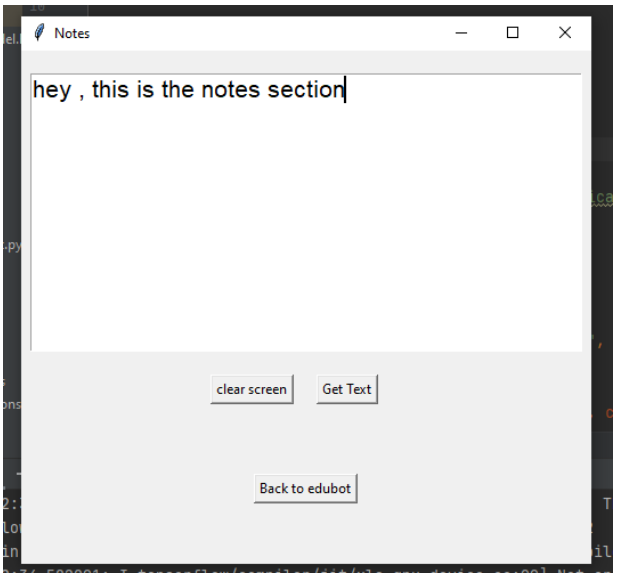

Fig-9: This page is shown when user click on file section and in that click on notes.

5. CONCLUSION

This project enables students and teachers with the academic task to be performed. Due to pandemics schools and colleges are learning online and they need some portable application that has everything in one application. As chatbot is becoming the new era of information and communicating system. The chatbot will interact with the user and answer the query. With the help of a chatbot with multiple features such as video lectures, attendance tracking, query solving, schedule display, and creating notes one does not have to worry about browsing different platforms

whereas we find it one. This chatbot becomes a medium between students and teachers. It is user friendly and will have all the necessary information and tools that are required for studying.

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