

Andromeda

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ABSTRACT

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Chatbots present a new way for individuals to interact with computer systems. Traditionally, to get a question answered by a software program involved using a search engine, or filling out a form. A chatbot allows a user to simply ask questions in the same manner that they would address a human. The most well-known chatbots currently are voice chatbots: Alexa and Siri. However, chatbots are currently being adopted at a high rate on computer chat platforms. A simple chatbot can be created by loading an FAQ (frequently asked questions) into chatbot software. The functionality of the chatbot can be improved by integrating it into the college website, allowing more questions to be answered. Chatbot systems typically require continuous tuning and testing. We have designed a chatbot which can be used on our college website. This chatbot helps the user know all the information about our college, for example the details about the number of courses provided, the placement drives, and many more. The user can also use the live chat for any queries. This is a 24*7 chatbot. AIML is used to store the queries with the answer tags in the database, that is when a user asks queries the chatbot fetches the answer from the database using AIML. The answers are searched in the database using a tags which are stored in the backend.

Keywords: Chatbot, AIML, Andromeda

I. INTRODUCTION

Chatbots are simulator which can understand human language, process it and interact back with humans while performing specific tasks. A chatbot is often described as one of the most advanced and promising expressions of interaction between humans and machines. However, from a technological point of view, a chatbot only represents the natural evolution of a Question Answering system using Natural Language Processing (NLP). Chatbots are used in dialog systems for various purposes including

customer service, request routing, or for information gathering. While some chatbot applications use extensive word-classification processes, natural language processors, and sophisticated AI, others simply scan for general keywords and generate responses using common phrases obtained from an associated library or database. There are many types of chatbots available, a few of them can be are as follows:

- Text-based chatbot: In a text-based chatbot, a bot answers the user's questions via text interface.

- Voice-based chatbot: In a voice or speech-based chatbot, a bot answers the user's questions via a human voice interface. Most Chatbots are accessed on-line via website popups or through virtual assistants. They can be classified into usage categories that include: commerce (e-commerce via chat), education, entertainment, finance, health, news, and productivity. AIML is used to store the queries with the answer tags in the database, that is when a user asks queries the chatbot fetches the answer from the database using AIML. The answers are searched in the database using a tags which are stored in the backend.

1.1 Problem Statement

The task here is automating conversations that would otherwise require an employee to answer, organizations save time and money that can then be allocated to other work. Generate Leads and Revenue: Chatbots use machine learning and direct messages to gather information necessary to provide effective support.

1.2 Existing System

There are many applications that are incorporating a human appearance and intending to simulate human dialog, but in most of the cases the knowledge of the conversational bot is stored in a database created by a human expert. However, very few researches have investigated the idea of creating a chat-bot with an artificial character and personality starting from web pages or plain text about a certain person. This report describes an approach to the idea of identifying the most important facts in texts describing the life (including the personality) of an historical figure for building a conversational agent that could be used in college website.

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appearance of section headings, document margins, column width, column spacing and other features.

1.3 Proposed System

The proposed system will simply take the query of the user, and will give response according to the query. The system will match the user query with knowledge base and see for the appropriate response. The system can also reply to the general queries of the user. The system utilizes worked in counterfeit consciousness to answer the inquiry. A Web application will be used to serve as the front end and the bot will learn to respond on the server. Our web application will aim at getting the inputs from the user and display the generated output.

1.4 Objective

The objective of chatbot using AI is to design an incremental model to recognize the query of the user based on artificial algorithms that analyses user's queries and understand user's message. This System is a web application which provides answer to the query of the user. Users just have to query through the bot which is used for chatting. The system will reply using an effective Graphical user interface which implies that as if a real person is talking to the user.

The organization of this document is as follows. In Section 2 (**Methods and Material**), a detail explanation about the implementation of the chatbot is given with suitable flow diagrams. In Section 3 (**Result and Discussion**), the testing part result is being discussed in detail. In Section 4(**Conclusion**) the project final phase is mentioned with the future improvements that can be done.

II. METHODS AND MATERIAL

System Implementation is the stage where design phases are converted into a working system, totally

new application is built replacing the old one by using all the theoretical design. Coding is done in this phase using any language that's suitable for the system. This system is implemented using AIML Framework.

2.1: Frameworks, Libraries and Technologies Used in Implementing Chatbot

AIML

AIML stands for Artificial Intelligence Markup Language, which is an open source chatbot scripting framework. AIML is just like XML or HTML in which it consists of extensible tags that are used to mark-up text which can be understood by the AIML Interpreter. Building chatbots using NLP/ML/Deep learning takes time whereas it is easier to implement it using AIML. We need to feed enough inputs for the chatbot to learn and here input doesn't mean just questions it can be its category too. Pattern recognition is the example that aims to model computer systems that wants to learn human questions. This process is divided into three parts; the first part is the question inputted by the user, the second part is that the system performs the processing of the words and fit the format into the format that coder has designed and then pattern recognition between the user input and patterns listed in AIML files. In the third part system picks one answer and sends it to the user. Chatbots that come under AIML are rule based, however self-learning feature is also there to some level. AIML contains a set of rules which define the conversation capability of a chatbot. NLU processor is used which takes AIML rules to understand and reply to the questions asked by the user. The more rules we add to the AIML the more capable/ intelligent the chatbot is. Linguistic communication understanding (NLU) processors in chatbot process AIML and their chat response which is controlled through AIML rules.

Figure 6.1 shows the flow diagram of how AIML based chatbots work. The texts "take call", "accept call" and "join call" end up in same state "accept call". If the input pattern is not found, then the chatbot will simply reply with "could not understand phrase". However, with the AIML rules the chatbot can handle broad range of questions/queries and it makes the most effective in all domains.

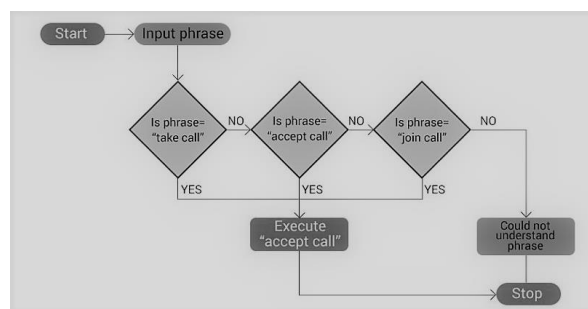


Figure 6.1: Flow diagram of AIML

XML

XML (Extensible Markup Language) is a text-based markup language derived from Standard Generalized Markup Language (SGML). XML tags understand and identify the data and are used to store and organize the data, rather than specifying how to display it like HTML tags, which are used to display the data. XML usually work behind the scene to simplify the creation of HTML documents for large web sites. XML is also used to exchange the information between organizations and systems. XML can be used for offloading and reloading of databases.

Flask

Flask (Flux Advanced Security Kernel) is an application programming interface of python that allows the user to build web-applications. This framework is explicit and easier to learn because it needs very less base code to implement a simple application. This web application framework has a collection of modules and libraries that help the developer to code less. In order for the user to

remember the URL, this web framework provides routing techniques. In our proposed system, a simple college website is designed using this framework to display the overview of the college and to design a chatbot.

NLTK

NLTK (Natural Language Toolkit) contains libraries and programs for statistical language processing and it is one of the best platforms to work with human language data. This module is used for Natural Language Processing. It contains packages that makes machine to understand human data and process it so that it can reply with appropriate response. Human data is unstructured; this library is used to analyze such data.

2.2: Implementation Steps

Using all the above mentioned frameworks and libraries start with implementation of a chatbot application. First a website is designed using Flask API and chatbot is embedded in it. Following are the steps used for building our rule based AIML chatbot:

1. Install AIML Modules:
2. Create a standard startup file
3. Creating AIML file
4. Including random responses in AIML file
5. Write program

Installing AIML Modules:

To code any language, we need modules or header files. For python 3

Pip install python-aiml Or Pip3 install python-aiml

Creating a standard start-up file:

It is important to create a start-up file called “std-startup.xml” as the starting point followed by AIML files.

Creating AIML files & including random responses in it:

The file std-startup.xml file can only handle one pattern, creating more AIML files and storing responses in it helps the chatbot to handle more pattern and respond based on the query. Adding random responses in AIML file allows the chatbot to interact with it more and hence it will learn more. In AIML, more the rules; more intelligent bot.

Write program: We started coding in python language and created a website using flask as frame work. AIML scripting language is also used to code in AIML files to store the responses in categories. used at the beginning and end of the AIML document.

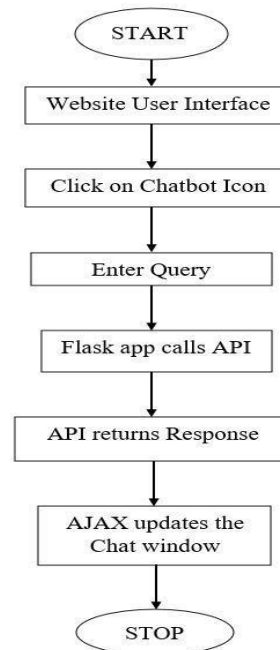


Figure 6.3: Flowchart for Chatbot

A flowchart is a diagram that represents how data flow throughout the system and how some event controlling decisions are made. Initially, user will be in a website user interface, clicks on the chatbot icon to start conversation with chatbot. Text is an input in our application, the user types a query and the chatbot application generates the response message and replies back to user in the chatbot interface. The steps involved are shown in figure 6.3

III. RESULTS AND DISCUSSION

Software testing is the process to determine the correctness, completeness, security and quality of developed computer software. This includes the process of executing the program or application with the intent of finding errors. Testing furnishes a criticism or comparison that compares the state and behaviour of the code against a specification. First step of the testing is to determining the errors in a program. Clearly the success of testing is finding out errors in programs depends critically on the test cases. Because code is the only product that can be executed and actual behaviour can be observed, testing is the phase where the errors remaining from all the previous phases must be detected. The program to be checked is executed with a set of test cases and the output for the test cases are evaluated to determine if the programming is performing as expected.

3.1 Testing Methodologies

Testing methodologies in chatbot are different than testing software, chatbot require some special attention and procedure. Developer testing is for verification and validation, mainly to see if the chatbot answers with the right question. Likewise, functional testing and user testing is also carried out on our chatbot. The following are the features we tested on chatbot:

- Conversational flow
- Understanding
- Bot speed
- Bot accuracy

3.2 Testing Criteria

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TABLE I
Test cases Andromeda

Sl. No	Test Procedure	Pre-Condition	Expected Result	Passed/failed
1	Click on chat icon	---	Chatting window open	Passed
2	Type a question	Interface that allows user to type question	Gives a correct answer to the question	Passed
3	Click on the link sent by chatbot	Question typed by the user	A new tab opened containing more information	Passed
4	Choose close button	Chat window	Chatting window closes	Passed
5	Run in Google Chrome	---	Executed successfully	Passed
6	Run in Firefox	---	Executed successfully	Passed
7	Run in Microsoft Edge	---	Executed successfully	Passed
8	Run in Safari	---	Executed successfully	Passed
9	Query typed in language other than English	Interface that allows user to type question	Gives a correct answer to the question	Failed

IV. CONCLUSION

In this project, we will use an Android virtual application that is called Andromeda, who will be able to communicate with users. Staff and students are free to submit their applications. The chatbot provides a fast and efficient search for the answers to the questions and receive the right to the left, to the question. The background of the research included an overview of the conversation process and try to find the keywords related to the queries and to ensure the correct link. The database is a repository that contains information on the questions & answers, search keywords, and the event viewer. AIML is used for this purpose.

The future scope of the project is to improve the current state of knowledge on the functioning of the college. Some of the new features that can be added to the bot is speech recognition, which enables the students to ask questions verbally and receive answers from, the bot integration of multiple channels such as phone, SMS or various social media platforms, such as Skype, Facebook, and Twitter, and in the process, statistics, and interactive queries, that a bot to know the context of the present discussion with the student.

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