

Survey on Campus Platform with Personality Development Tools

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Abstract: *Voicebot has become a popular tool for communication between humans and machines in recent years. Voicebots are conversational interfaces that recognize spoken natural language and speak with users using machine learning technologies (such as deep neural networks, automatic speech recognition, natural language processing, prediction models, and personalization). Most university campus apps are currently offered as static web pages or app menus. The goal of this research was to create a campus virtual assistant with personalized tools. Personalized tools include to do list and Eisenhower matrix for time management, Johari window for self-awareness and Gratitude diary for mindfulness. The purpose of this research was to improve the usability of campus platforms and provide students with personality development tools to contribute into their personal growth.*

Keywords: Voicebot, Natural Language, Eisenhower Matrix, Johari window

I. INTRODUCTION

The way information is exchanged has changed in recent years due to rapid development in mobile devices and internet. Voice assistants and chatbots are becoming increasingly popular ways for users to connect with systems. A voicebot is a computer software that uses Artificial Intelligence in messaging services to speak with humans. The aim of this research is to create a voicebot system to assist users who access campus websites using tools that expose Artificial Intelligence methods like Natural Language Processing, allowing users to communicate with a college voicebot using natural language input and training the chatbot using appropriate Machine Learning methods so it can generate a response. Sentiment Analysis extracts opinions, thoughts and emotions from the text or emoticons. Along with the campus affairs platform that keeps student updated with latest information at one place, the proposed system also offers personalized tools that act as a catalyst into student's personal growth. Johari Window is one of the most effective tools for developing self-awareness and improving communication skills, it is a psychological model that helps us to understand more about ourselves. It consists of an assessment with few questions and based on user's answers to those questions their self-awareness is calculated. Eisenhower matrix is a simple tool for time management, it is also referred to as urgent-important matrix, helps one decide on and prioritize tasks by urgency and importance, sorting out less urgent and important tasks which one should either delegate or not do at all. Gratitude diary involves making a note of things that you are grateful for and helps increase optimism, improve self-esteem, reduces stress and has many health benefits as well. All these tools in combination with the campus affairs platform will keep students updated, make them time efficient and self-aware.

II. LITERATURE SURVEY

In the recent years, there are multiple research made in this field to make campus platform interactive. There is an exhaustive list of algorithms in this field which will help the students getting access to a user friendly campus platform. Few of the algorithms which we have studied are:

1. Bayes Classifier
2. Random Forest
3. Porter stemmer
4. Decision tree
5. Keyword Matching

Besides these, there are many different algorithms. All these algorithms differ in their speeds, accuracy, cost and complexity. Some of the relevant researches are mentioned in this section

[1] Enabling intelligent environment by the design of emotionally aware of virtual assistant: A case of smart campus by PO-SHENG CHIU, in 2020. This study mainly developed a Deep Neural Network (DNN) based emotionally aware campus virtual assistant. The main contributions of this research are: (1) This study introduces the Chinese Word Embedding to the robot dialogue system, effectively improving dialogue tolerance and semantic interpretation. (2) The traditional method of emotion identification must first tokenize the Chinese sentence, analyze the clauses and part of speech, and capture the emotional keywords before being interpreted by the expert system.

[2] Empathic chatbot: Emotional intelligence for mental health well-being, in 2020 by Sarada Devaram. This research explains the different types of emotional intelligence methodologies adopted in the development of an empathic chatbot and how far they have been adopted and succeeded.

[3] Health Assistant bot: A personal assistant for the Italian language, in 2020 by Marco Polignano. This article presents HealthAssistantBot, an intelligent virtual assistant able to talk with patients in order to understand their symptomatology, suggest doctors, and monitor treatments and health parameters. In a simple way, by exploiting a natural language-based interaction, the system allows the user to create her health profile, to describe her symptoms, to search for doctors or to simply remember a treatment to follow. Specifically, the methodology exploits machine learning techniques to process user's symptoms and to automatically infer her diseases. Next, the information obtained is used by our recommendation algorithm to identify the nearest doctor who can best treat the user's condition, considering the community data.

[4] Retrieval-polished response generation for chatbot in 2020 by Liang Zhang. This paper proposes a retrieval-polished (RP) model for response generation that polishes a draft response based on a retrieved prototype. They first adopt a prototype selector to retrieve a contextually similar prototype. Then, a generation-based polisher is designed to obtain a polished response. Finally, a polished response filter is introduced to choose whether the final reply should be the retrieved response or the polished response.

[5] Smart college chatbot using ML and python, in 2021 by Hrushikesh Koundinya. This project aimed to implement online chatbot system to assist users who access college website, using tools that expose Artificial Intelligence methods such as Natural Language Processing, allowing users to communicate with college chatbot using natural language input and to train chatbot using appropriate Machine Learning methods so it will be able to generate a response. Different algorithms such as Porter Stemmer Algorithm is used for expelling suffixes from words in English. Word request vector process is used for estimating word request closeness between two sentences.

[6] NEU-chatbot: Chatbot for admission of National Economics University in 2021 by Trung Thanh Nguyen. In this implementation, chatbot was developed by Deep Learning models, which are already integrated into the Rasa framework. Also, a rational pipeline is proposed for Vietnamese chatbots with their data preprocessing to obtain optimal accuracy and to avoid the overfitting of the model. This model can detect more than fifty types of questions from users' input with an accuracy of 97.1% on test set. The chatbot was applied for National Economics University's official admission Fanpage on the Facebook platform.

[7] Ask Rosa – The making of a digital genetic conversation tool, a chatbot, about hereditary breast and ovarian cancer in 2021 by Elen Siglen, HildegunnHøberg Vetti, Aslaug Beathe Forberg Lunde. Here a framework for future health chatbot initiatives is presented. The participatory methodology in combination with an iterative approach ensures that the patient perspective was in-corporated at every level of the development process.

III. PROPOSED SYSTEM

3.1 Natural Language Processing

NLP stands for Natural Language Processing, which is a part of Computer Science, Human language, and Artificial Intelligence. It is the technology that is used by machines to understand, analyse, manipulate, and interpret human's languages. To input data into the any model, the data input must be in vector form. We will do the few transformations. Remove punctuation and numbers then transform all words to lower-case and Remove stop words (e.g. the, a, that, this, it, ...) finally Tokenizer the text.



3.2 Personality Development Tools

This implementation provides some personalized tools such as:

- To do list: Helps keeping track of your daily tasks.
- Self-assessment: Johari Window is one of the most effective tools for developing self-awareness and improving communication skills, it is a psychological model that helps us to understand more about ourselves.
- Gratitude diary: It involves making a note of things that you are grateful for. Gratitude diary helps increase optimism, improve self-esteem, reduces stress, and has many health benefits as well.
- Eisenhower matrix: A simple tool for time management, it is also referred to as urgent-important matrix, helps you decide on and prioritize tasks by urgency and importance, sorting out less urgent and important tasks which you should either delegate or not do at all.

3.3 General Architecture

This College Chatbot System is a web-based application which gives responses to the user queries. The system architecture of the chatbot system is shown in the Fig. 1. Firstly, the system asks the user to login into the system by providing his/her mail and password. Then after navigating to the Chatbot, it responds to the user by greeting him/her and gives the user options of what he can do. Chatbot provides options whether the student wants to ask a query related to classroom locations for which the data is stored in the database, if the user wants to ask about deadlines related to some assignments and submissions the bot will answer the query based on the information updated by the admin i.e., staff.

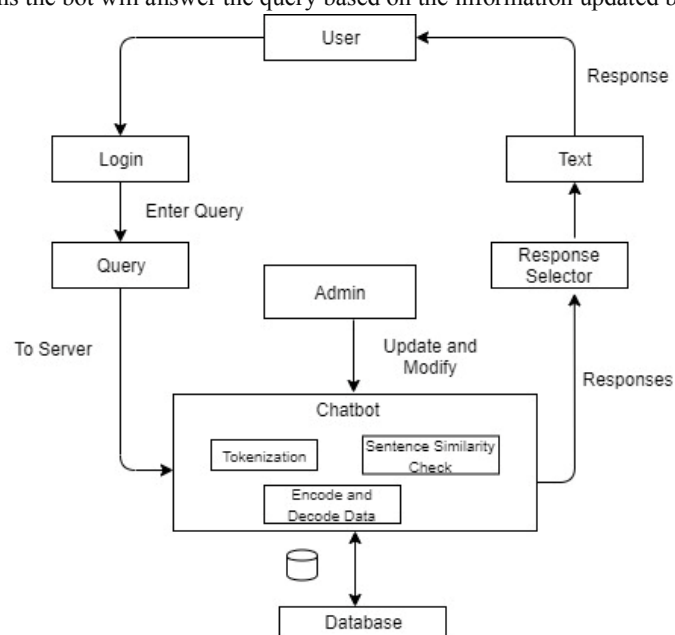


Figure 1: System Architecture

On top of that there are some personality development tools choosing which user can interact with the bot and answer few questions to and get feedback from the bot which will help them improve time efficiency, self-awareness and prioritization of their tasks. The chatbot system applies Machine Learning algorithms to break down the user queries. Once the user asks a query, the keywords in the query are detected using Natural Language Processing. As the query description can change from one person to another person. The same query may be asked in a different way by the users. One user asks a query so simply and clearly while another user may request the same query in a completely different manner. So, it is required to find what is the exact information the user seeks to know and to find a correct response for the corresponding user query. The chatbot system firstly removes the stop words from the user input, if they are present in the queries asked by the user. After removing the stop words from the user queries, the tokenization process is done. A suitable response is explored in the knowledge database. If the response is found in the database, it is displayed to the user; else, the system notifies the admin about the missing response in the database and gives a predefined response to the user. Admin can write the

missing response into the database by logging into the admin block in website so that if the user asks the same query next time, he/she may get the suitable response. At the end of conversation, the college chatbot system collects the feedback from users to improve the system efficiency.

IV. CONCLUSION

Voicebots and conversational assistants increase the ease of use for different platforms, in this study, we have implemented a Personalized campus virtual assistant using machine learning technology such as natural language processing, prediction models, and personalization, Voicebot can correctly answer student's queries about campus maps, classroom configuration, basic college affairs, and can help students in their personal growth through personalized tools. Personalized tools intend to improve the student's self-awareness, make the student time efficient by helping him prioritize the daily tasks. In future combined with student mentoring tools the effectiveness of the proposed system can be improved.

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