A MINI PROJECT REPORT

On

Chatbot To Answer User Questions In Hindi Related To College Facilities

Submitted in partial fulfillment of the requirement of
University of Mumbai for the Course

Natural Language Processing
In
Computer Engineering (VIII SEM)

Submitted By
Anith Cherian Joy
Prateek Mata
Sagar Pramod
Sanal Sudhakaran

Subject Incharge
Dhiraj Amin

Lab Incharge
Dhiraj Amin

Department Of Computer Engineering

PILLAI COLLEGE OF ENGINEERING

New Panvel – 410 206

UNIVERSITY OF MUMBAI

Academic Year 2020 – 21

Department of Computer Engineering
Pillai College of Engineering
New Panvel – 410 206

CERTIFICATE

This is to certify that the requirements for the project report entitled '**Chatbot to answer user questions in Hindi related to college facilities**' have been successfully completed by the following students:

Name	Roll No.
Anith Cherian Joy	A805
Prateek Mata	A839
Sagar Pramod	A866
Sanal Sudhakaran	A867

in partial fulfillment of the course Natural Language Processing in Computer Engineering (VIII SEM) of Mumbai University in the Department of Computer Engineering, Pillai College of Engineering, New Panvel – 410 206 during the Academic Year 2020 – 21.

_____

(Prof. Dhiraj Amin)
Subject Incharge

Department of Computer Engineering
Pillai College of Engineering
New Panvel – 410 206

PROJECT APPROVAL

This project entitled "**Chatbot to answer user questions in Hindi related to college facilities**" by Anith Cherian Joy, Prateek Mata, Sagar Pramod and Sanal Sudhakaran are approved for the course Natural Language Processing in Computer Engineering (VIII sem) of Mumbai University in the Department of Computer Engineering.

Examiners:

1. _____

2. _____

Subject Incharge:

1. _____

Date:

Place: New Panvel

DECLARATION

We declare that this written submission for Natural Language Processing mini project entitled "Project Title" represents our ideas in our own words and where others' ideas or words have been included, we have adequately cited and referenced the original sources. We also declare that we have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any ideas / data / fact / source in our submission. We understand that any violation of the above will cause disciplinary action by the institute and also evoke penal action from the sources which have not been properly cited or from whom prior permission has not been taken when needed.

Project Group Members:

Anith Cherian Joy

Prateek Mata

Sagar Pramod

Sanal Sudhakaran

Table of Contents

Abstract

Digitalizing education and reinventing the learning experience is one of the big challenges in this age of information. In the field of E-learning, the application of a chatbot as part of the education has shown interesting potential, both as a teaching and administrative tool. Chatbots have been 'trending' for a few years and quite a few papers examining it in the educational sector have been published, albeit very little interest seems to have been given to the summation of this knowledge. In an attempt to fill the knowledge gap this thesis performed a literature study to examine the documented features and possible uses for chatbots in an educational context. Since quite a few chatbot technologies have been developed at this time and exhibit varied functions, this study was limited to only examine bots based on the XML derived language AIML.

The results imply that chatbots in education have quite a few uses and even more possible features. An AIML-based chatbot can be both simple and complex to implement, all depending on the effort put into implementation. The tool is diverse and may be used for many different purposes and aims, the only limitation being the creators creativity and imagination.

List of Figures

Chapter 1

Introduction

1.1 Fundamentals

In recent decades, the number of students per lecturer has constantly risen (Nicol & Macfarlane-Dick, 2006). Large-scale lectures at universities with more than 100 students per lecturer and massive open online courses (MOOCs) are increasingly becoming the default learning scenario. Consequently, individualized support provided by lecturers is nearly impossible and students are unable to engage in effective learning. Several studies have revealed that this lack of individualized support leads to weak learning outcomes, high drop out rates and dissatisfaction. The best solution would be to have one teacher per student. Obviously, this is not possible due to financial and organizational restrictions.

Chatbots have the potential to solve this problem using the examples of other sectors. Chatbots have a growing presence in modern society, becoming integral parts of everything from personal assistants on mobile devices to technical support help over telephone lines, and even being used for health interventions . The usage of messaging apps in the past years has also increased exponentially. In 2016, it is estimated that about 75% of all smartphone users used some sort of messaging apps . Moreover, analysts predict that by 2020, 30% of all web browsing sessions will be done without a screen, 50% of all searches will be by voice commands, and customers will manage 85% of their enterprise relationships without interacting with a human being.This rapid increase of chatbots comes with four main advantages. Firstly, the implementation of chatbots saves customer service costs by replacing nearly all human assistants.
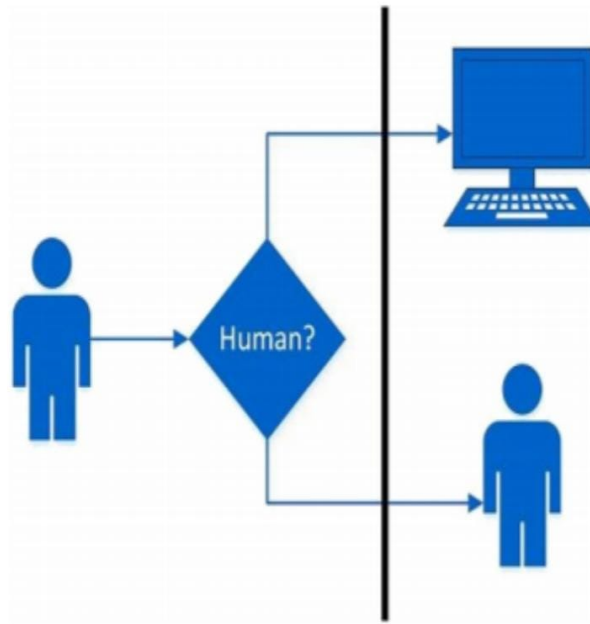
Fig.1 Interpretation

1.2 Objectives

Continuing with the problem introduced in the previous section that chatbots are still not commonly implemented in education, the aim of this thesis is set in context. In order to further the development of educational chatbots it is important to find out what has been done, and to summarize this knowledge in a concise and relevant manner. No such summarizing study was found, thus, the aim of this study was to produce that summary to find out what pedagogical uses and capabilities a chatbot has in an educational context by reviewing the literature in the field, this means looking at what the chatbot can do and be used for in an educational context. In this circumstance it is also relevant to look at if the chatbot can be useful on its own or if additional technology is needed, such as any system the chatbot needs to be encompassed in or that enhance its capabilities, e.g. finding due date of an assignment. Hence, the work in this study can be used as a stepping stone for coming researchers who might more efficiently uncover further potential of the technology. This aim was developed with the focus on what might be needed for teachers and researchers when continuing to develop the chatbot technology. Of course there may be more that one thing that is important, for example which type of chatbot to use, how to adapt it properly to a course, what kind of architecture the chatbot system might need, how to achieve the greatest pedagogical value and so on. But the question of what role a chatbot could take and what can it

actually do in the context of education seemed more acutely relevant, since its answer is a good starting point to answering other questions.

1.3 Organization of the Report

The report is organized as follows: The introduction is given in Chapter 1. It describes the fundamental terms used in this project. It motivates to study and understand the different techniques used in this work. This chapter also presents the outline of the objective of the report. The Chapter 2 describes the review of the relevant various techniques in the literature systems. It describes the pros and cons of each technique. The Chapter 3 presents the Theory and proposed work. It describes the major approaches used in this work. The societal and technical applications are mentioned in Chapter 4. The summary of the report is presented in Chapter 5.

Chapter 2
Literature Survey

2.1 Introduction

This project is mainly targeted at colleges and the synchronization of all the sparse and diverse information regarding regular college schedule. Generally students face problems in getting correct notifications at the correct time, some times important notices such as campus interview, training and placement events, holidays and special announcements. Smart Campus tries to bridge this gap between students, teachers and college administrators. Therefore in the real world scenario, such as college campus, the information in the form of notices, oral communication, can be directly communicated through the android devices and can be made available for the students, teachers directly for their android devices and the maintenance of application will be easier in later future because of the use of architectural which separates the major works in the development of an application such as data management, mobile user interface display and web service which will be the controller to make sure for fast and efficient maintenance of application

2.2 Literature Review

2.2.1 Chatbot Using A Knowledge in Database Human-to-Machine Conversation Modeling Bayu Setiaji ,Ferry Wahyu Wibowo 2166-0670/16 2016 IEEE 2016 The machine has been embedded knowledge to identify the sentences and making a decision itself as response to answer a Question.

2.2.2 Towards an efficient voice-based chatbot J. Quintero Student Member IEEE, and R. Asprilla, Member, IEEE 2015 IEEE THIRTY FIFTH CENTRAL AMERICAN AND PANAMA CONVENTION 2015 The development and integration of technologies used in an experimental natural conversation system designed to run on a humanoid robot.

2.2.3 Smart Answering Chatbot based on OCR and Over generating Transformations and Ranking S. Jayalakshmi, Dr.Ananthi Sheshasaayee 9781-5090-5960-7/17 2017 IEEE 2017 An automated answering Chatbot system to respond to users question using text article from digital document le.

2.2.4 Open-domain personalized dialog system using user-interested topics in system responses Jeesoo Bang, Sangdo Han, Kyusong Lee and Gary Geunbae Lee 978-1-4799-7291-3/15/2015 IEEE The proposed dialog system that uses topics that are of interest to the user higher evaluation scores for both personalization and satisfaction than the baseline systems. These results demonstrate that the use of topics in the system response provides a sense that the system pays attention to the users utterances; as a consequence the user has a satisfactory dialog experience.

2.2.5 Review of Chatbot System in Hindi Language Instead of AIML based bot, other algorithms can be implemented. We can include voice-based queries. The users will have to give voice input and the system will give the text output. Also, after successful execution of chat bot in college domain, we can implement it in other domains like medical, forensic, sports, etc. It will be beneficial in all the fields as without spending much time, we are accessing the relevant information and that too without any sorting.

Chapter 3

Implementation Details

3.1 Overview

3.1.1 Existing Methodology and Systems

There are multiple multilingual chatbots in the market. To overcome this problem, people can use no-cost, publicly available chatbots that use a single language (typically, English) together with online translation software such as Google Translate to chat in a large variety of languages. They can copy and paste text from the chatbot to the translation system and vice versa. However, this copy-and-paste solution is very tedious and time-consuming, most people do not want to take the additional time and effort. Time delays affect satisfaction with a Web site, intentions to return, and number of tasks performed and if the software is not easy to use, satisfaction is affected, and people might not use the system again A fully automated system can provide translation support to a chatbot in less than a second, thus increasing system satisfaction and enhancing intentions to return. In addition, it allows people to converse faster and generate more comments if the delays are shorter.

3.1.2 Proposed Methodology and System

The proposed system is an application written in python. The corpus is a text file with all information about the college in the Hindi language.If the user enters a greeting or a question already stored in the data file the chatbot replies with the answer. The system has this refined algorithm:

1. Get users input.

2. Remove any unwanted input

3.Check if its a greeting which the chatbot has predetermined answer to

4.Convert the sentence to words and perform lemmatization to give tokens and remove any stop words which are stored on the stop words file
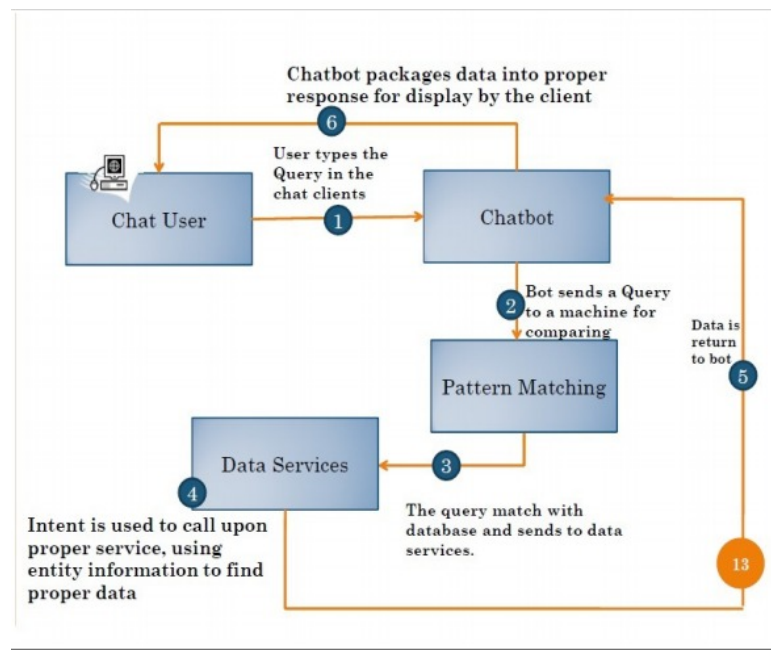
5.Use the corpus to show an answer

6. Show the output

Fig.2 Block Diagram

3.2 Implementation Details

Methodology

1) System Analysis: This project aims to allow the chatbot to quickly answer any questions asked by the user in the Hindi language. This gives the user the opportunity to use Hindi as input and still get what he desires instead of sticking to English.

2)Requirement Analysis Techniques

We used simple Google searches to find the required information pertaining to our project needs.

3) Operational Feasibility

The system can be distributed as a single bundle to run it directly and the chatbot is made so that it's easy to operate by any novice user. The Chatbot is operationally feasible as its interface is very user friendly, and there is no complex operation requiring heads to roll.

4) Feasibility Analysis

As the application is readily available to be run on any platform provided it has the minimum criteria to run it (a stable internet connection), it's trivial to deploy the application.
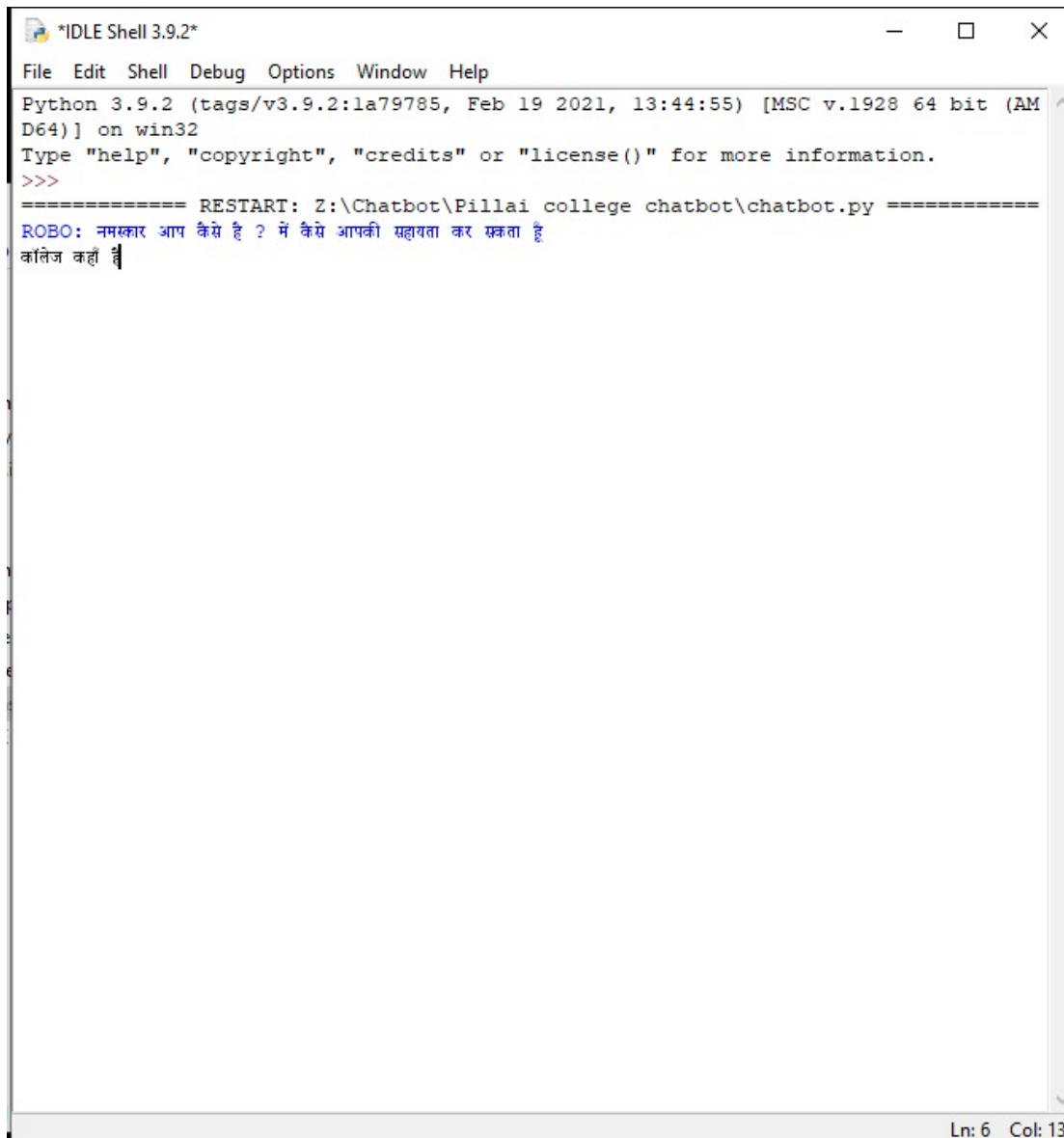
5) Technical Feasibility

As we have successfully demonstrated that the concept we have used is working, we don't need to provide any more evidence to prove the feasibility. It will work on any given platform. The Chatbot is technically feasible, as there is the technology available and the professional to implement the project.

Chapter 4

Project Inputs and Outputs

4.1 Inputs Details

Chatbot takes input in Hindi language about the college facilities.

Fig.3 Input

4.2 Output Details

The chatbot returns the answers in hindi from the corpus made for the college.

Fig.4 Output

Chapter 5
Summary and Future Scope

5.1 Summary

Education Chatbots improve communication, increase productivity, and minimize ambiguity from interactions. They can thus effortlessly lend themselves to focused, result-oriented online conversations — which is precisely what modern educational institutes need in this day and age. The use of chatbots in educational mobile apps help students in getting instant replies and help for their queries. Chatbots help in automating trivial tasks for students such as submitting assignments, sending replies to emails, sending instant messages, and feedback.

With efficient chatbot development practices, they can be made capable of literally engulfing and processing whatever information comes their way.

5.2 Future Scope

The proposed chatbot can answer to only textually typed question which can also be implemented for voice-based question answering system and can also be implemented for other reginal language. Instead of AIML based bot, other algorithms can be implemented. We can include voice-based queries. The users will have to give voice input and the system will give the text output. Also, after successful execution of chat bot in college domain, we can implement it in other domains like medical,forensic, sports, etc. It will be beneficial in all the

fields as without spending much time, we are accessing the relevant information and that too without any sorting.

References

[1] A.M Rahman, Alma Islam, "Programming Challenges of Chatbot.", 2017 IEEE Region 10 Humanitarian Technology Conference, (21-23 Dec 2017).

[2] Belfin R.V, Shobhana A.J, Megha Manilal, Ashly ann Mathew, Blessy Babu, "A Graph Based Chatbot for cancer Patients", 5th international conference on advanced computing & communication systems (ICACCS),(2019).

[3] Eko Handoyo, M.Arfan,Yosua Alvin Adi Soetrisno, Maman Somantri, Aghus Sofwan, Enda Wista Sinuraya, "Ticketing Chatbot Service using Serverless NLP Technology", Proc. Of 2018 5th Int. conf. on information Tech., Computer and Electrical Engineering (ICITACEE), (2018).

[4]Harsh Pawar, PranaPrabhu, Ajay Yadav, Vincen Mendonca, Joyce Lemos, "College Enquiry Chatbot Using Knowledge in Database", International journal for research in applied science & engineering technology (IJRASET), (April 2018).

[5] Shah Manthan, Jigneshkumar, Arnav Mediratta, Akshay Kundale, Shubham Nangare, "AMBER Chatbot and Detection of Paraphrases for Devnagari", Vishwakarma Journal of engineering research, (4 Dec 2017).

[6]   Partrick Jansson, Shuhua Liu, "Detection of knowledge and emerging named entity from social media by using LMST Model", International Conference on Informatics, Electronics & Vision, India, pp. 1-5, (2013).

[7] Mohamed Nabil Allam and Mohamed Hassan Haggag, "Question-Answering System: A survey", International Journal of Research and Reviews in Information Sciences (IJRRIS), (September 2012).

[8] Namrata G. Kharate and Dr. Varsha H. Patil, "survey of machine translation for Indian languages to English and its approaches", "International journal of scientific research in computer science, engineering and information technology", (2018).

[9] M Dahiya, "A tool for conversation: Chatbot", "International journal of computer science and engineering", (2017).

Acknowledgement

At first we would like to express our sincere thanks and gratitude to our subject teachers and Prof Dhiraj Amin for his guidance and motivating us to do a project titled 'Chatbot to answer user questions in Hindi related to college facilities'. His kind encouragement, and invaluable detailed suggestion and supervision throughout the phases of project development and presentation have helped us to successfully complete this project.

Secondly, we would like to express our gratitude to Dr. Sharvari Govilkar for giving us such ambitious project to work upon and to keep us determined throughout the projrct to achieve our desired goal.

Finally, we are thankful to Dr. Sandeep Joshi for giving us such an opportunity to work on this project and successfully bring it to accomplishment.

<div align="right">

Anith Cherian Joy
Prateek Mata
Sagar Pramod
Sanal Sudhakaran

</div>