Special Issue - 2019

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
NCRACES - 2019 Conference Proceedings

An AI Deployed Software Bot

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Abstract— **This study aims at developing a technology to simulate conversation with a computer that has been around for decades. The bots are user friendly version, with a powerful integration of Artificial Intelligence and Natural Language Processing. This study aims to design similar software bot for a department in a university that can answer any general query about the branch and its people. It is designed with accuracy and to aid in effective utilization of resources.**

Keywords—Natural-language-processing (NLP); Artificial Intelligence (AI); chat-bot

I. INTRODUCTION

Bot is software that is designed to automate the kinds of tasks a human would usually do, like search and find someone's personal profile, send a message to your colleague or make an appointment with your Dean. Major companies such as Microsoft, Apple, Google and Slack are having a dominant market today with respect to Bots.

This chat-bot is built using Artificial Intelligence 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 student. Students just have to ask queries through the bot which is used for chatting. Students can chat using any format as there is no specific format, the user has to follow. The System uses built in Artificial Intelligence to answer the query. Also, the system provides appropriate answers to the user queries which are related to college activities.

II. BACKGROUND AND RELATED WORKS

There are lots of Bots like Alexa, Siri and Cortana which acts like a personal assistant. Recent study of IEEE papers from 2018 on Software Bots, influenced us to derive the idea of building our own educational bot for a department. While the technology to simulate conversation with a computer has been around for decades, bots are user friendly version with a powerful integration of Artificial Intelligence and natural language processing. Major companies such as Microsoft, Apple, Google and Slack are having a dominant market today with respect to Bots.

Motive behind this project is to build an AI bot that can easily interact with students, parents and anyone interested in our Department of our college.
- Read and answer queries related to department.
- Generates Profile cards for all faculty/Dean or Staff.
- It allows you to send a message, when there is no instant answer for your query.
- It can show you videos of department events or take you to department website.
- Some of the general queries that it can answer are as below, but is not limited:
- What is the department intake in a department for all years?
- Who is HOD of the department? (Here, our Bot not only displays HOD information, but will also display profile card)
- Where is the department located in college? (Our bot gives direction to reach the department from entrance).

III. SYSTEM ARCHITECTURE

System architecture is a conceptual model that defines the structure, behavior and more views of the system. It also gives the formal description and representations of various components that makes up the system.
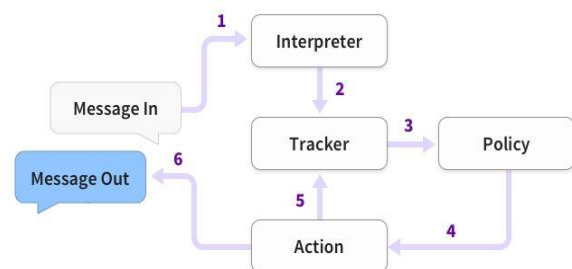

Figure 1: Architecture of Software Bot

Figure 1 depicts the architecture of Software Bot. The architecture consists of various fields that are organized in such a way that it supports the reasoning about the structures and behaviour of the system. The steps are:

(1) The message is received and passed to an Interpreter, which converts it into a dictionary form including the original text, the intent, and any entities that were found.

(2) The Tracker is the object which keeps track of conversation state. It receives the information that a new message has come in.

(3) The policy receives the current state of the tracker.

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(4) The policy chooses which action to take next.

(5) The chosen action is logged by the tracker.
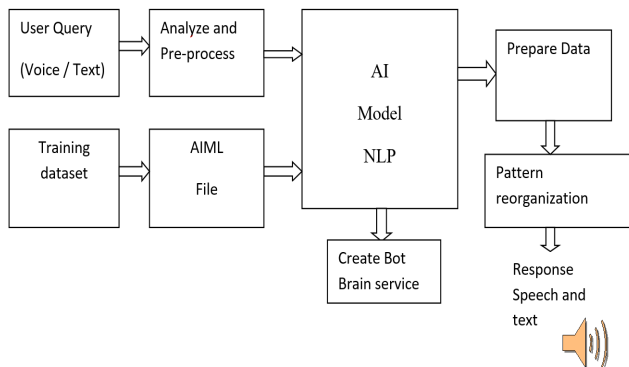
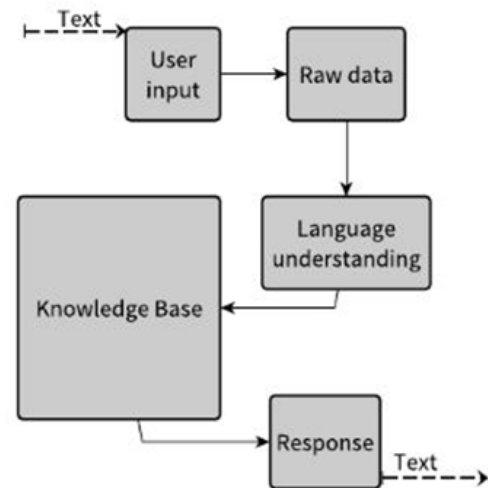(6) A response is sent to the user.

Figure 2: Design diagram of the Bot

The design fields deployed in the Software Bot are:

(1) **User Query:** interacts with the application.

(2) **Text / Voice**: The user interacts with the app giving input either as a text or voice to start the interaction with the bot.

(3) **Analyze and Preprocess**: The data will be processed into required format.

(4) **AI Model**: A module within the bot platform which incorporates Natural Language Processing to understand what the user meant and to figure out what "action" has to be carried out. The agent transforms the user request into machine readable and actionable data.

(5) **AIML Files:** Support or the service that the user wants from the agent. Intent determines the action by the code.

(6) **Response and Speech text:** This is the code. This part of the conversation lets you pass on the request from your bot to an external source and get response and pass it back to the user.

IV. METHODOLOGY

The overall system flow diagram of the proposed system is shown in Figure 2. The Software Bot deploy the rule-based approach. In a rule-based approach, a bot answers questions based on some rules on which it is trained on. The rules defined can be very simple to very complex. The creation of these bots is relatively straightforward using some rule-based approach, one of such languages is AIML (Artificial Intelligence Mark-up Language), a language based on XML that lets developers write rules for the bot to follow the protocols.

Figure 3: Block diagram of the Rule-based approach

The project is carried out in 4 stages overall which includes, development, test, staging and production. The process involves, collection of datasets, preprocessing of data by getting the data ready for Q&A or chat bot, the data is then used to train the bot with keywords for specific and default responses. During the training, three different approaches are used such as, direct keyword recognition, pop quiz with already populated list of choices and profile or image cards that expand itself on click.
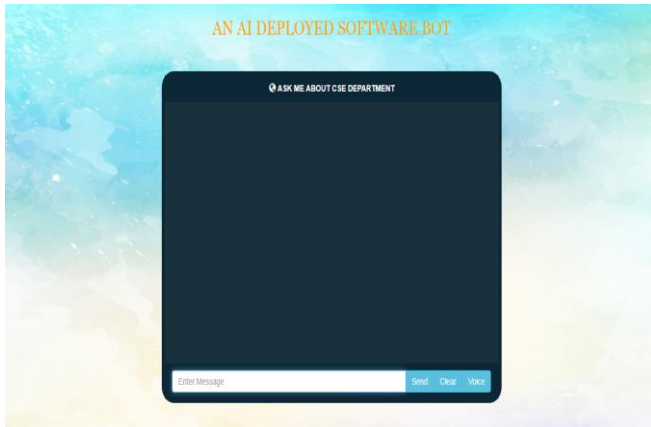
V. CONCLUSION

Chatbots are extremely valuable for businesses and the value will only increase as time goes by. While the technology to simulate conversation with a computer has been around for decades, bots are adaptable version with a powerful integration of Artificial Intelligence and Natural Language Processing. It creates an assisting guide to all users. It increases the efficiency by maintaining known standard responses. Improved question responsiveness and accuracy. Increased ability to track and monitor queries, highlighting gaps in available information
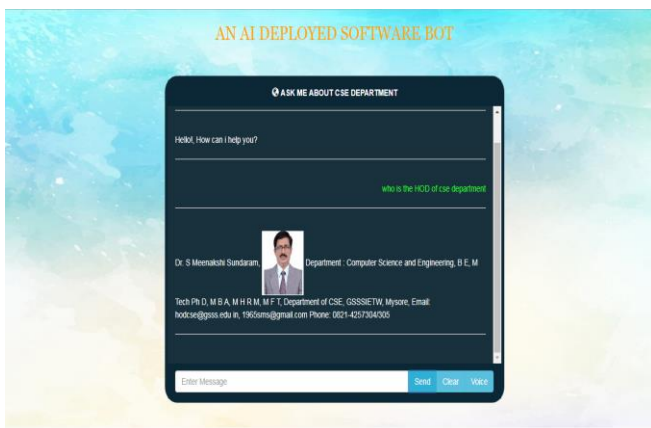
In conclusion, the proposed module can be revolutionary as this is a booming concept, when implemented can have a nationwide or even a global reach for students seeking to join our department. It can deliver a human-like experience and will be unique educational bot as there are not many educational institutions, which has adapted this innovative approach.

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Snapshot 1: The Front End of the Software Bot

Snapshot 2: An example of the query being answered

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