Whatsapp Chatbot

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A

PROJECT REPORT

ON

WHATSAPP CHATBOT

*Submitted to the Department of Information technology
in the partial fulfillment of requirements
for the degree of*

BACHELOR OF TECHNOLOGY

in

INFORMATION TECHNOLOGY

by

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(Affiliated to Dr. A.P. J. ABDUL KALAM TECHNICAL UNIVERSITY, LUCKNOW)

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B.Tech. Project Report

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MAY, 2020

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DECLARATION

       This is to certify that the work which is being presented in the B.Tech. Project Report entitled **"WHATSAPP CHATBOT"**, in partial fulfillment of the requirements for the award of the **Bachelor of Technology in Information Technology** and submitted to the **Department of Information Technology** of **IMS Engineering College, Ghaziabad, UP** is an authentic record of our own work carried out during a period from 2019 to 2020 under the supervision of RAVI SHANKAR PAL, Information Technology Department.

       The matter presented in this project report has not been submitted by me for the award of any other degree elsewhere.

CERTIFICATE

I hereby certify that the work which is being presented in the B.Tech final Year Project Report entitled **"WHATSAPP CHATBOT",** in partial fulfillment of the requirements for the award of the **Bachelor of Technology in Information Technology** and submitted to the Department of Information Technology of IMS Engineering College, Ghaziabad, is a record of bonafide work carried out by him/her under the supervision of **RAVI SHANKAR PAL, ASST. PROFF. IT Department**.

The matter presented in this thesis has not been submitted by me for the award of any other degree elsewhere.

GAURANG JINDAL   (1614313027)
DINESH UPADHAYAY   (1614313024)
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This is to certify that the above statement made by the candidate is correct to the best of my knowledge.

Signature of Supervisor   *Signature of HOD*

Ravi Shankar Pal (Asst. Prof.)   **Dr. S. N. Rajan**

Project Supervisor(s)

Signature of Director

Dr. Sraban Mukherjee
    (Director)

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ABSTRACT

Conversational modeling is an important task in natural language processing as well as machine learning. Like most important tasks, it's not easy. Previously, conversational models have been focused on specific domains, such as booking hotels or recommending restaurants. They were built using hand-crafted rules, like ChatScript , a popular rule-based conversational model. In 2014, the sequence to sequence model being used for translation opened the possibility of phrasing dialogues as a translation problem: translating from an utterance to its response. The systems built using this principle, while conversing fairly fluently, aren't very convincing because of their lack of personality and inconsistent persona . In this paper, we experiment building open-domain response generator with personality and identity. We built chatbots that imitate characters in popular TV shows: Barney from How I Met Your Mother, Sheldon from The Big Bang Theory, Michael from The Office, and Joey from Friends. A successful model of this kind can have a lot of applications, such as allowing people to speak with their favorite celebrities, creating more life-like AI assistants, or creating virtual alter-egos of ourselves. The model was trained end-to-end without any hand-crafted rules. The bots talk reasonably fluently, have distinct personalities, and seem to have learned certain aspects of their identity. The results of standard automated translation model evaluations yielded very low scores. However, we designed an evaluation metric with a human judgment element, for which the chatbots performed well. We are able to show that for a bot's response, a human is more than 50% likely to believe that the response actually came from the real character.

INTRODUCTION

Chatbot is a machine that interact with the human and it provides answer to the several problem of human in its domain.

We can safely say that we are in or at least entering the era of the chatbot. The big players, Google, Facebook, Microsoft and others, are all busy developing and improving this innovative user experience technology. Messaging applications are now more widely used than social networks, which is good news for the chatbot as they are such messaging applications!

The most natural definition of a chatbot is – a developed a program that can have a discussion/conversation with a human. For example, any user could ask the bot an inquiry or a statement, and the bot will respond or perform an activity as appropriate.

A chatbot interacts on a format similar to instant messaging. By artificially replicating the patterns of human interactions in machine learning allows computers to learn by themselves without programming natural language processing.

The most natural definition of a chatbot is – a developed a program that can have a discussion/conversation with a human. For example, any user could ask the bot an inquiry or a statement, and the bot will respond or perform an activity as appropriate.

For example, if you've asked Amazon's Alexa, Apple Siri, or Microsoft's Cortana, "What's the weather?", it would respond according to the latest weather reports it has access to. The complexity of a chatbot is determined by the sophistication of its underlying software and the data it can access.

Every enterprise has expanded IT infrastructure. From different fields, on-premise to cloud, companies with different supply providers, run on many different, internal and characterized-built applications, as well as ERP, encompass applications. There are other core applications like CRM and customer portals, which are the backbone of ERP.

Currently, many e-commerce companies are looking at various ways to used to improve their customer experiences.Whether for shopping, booking tickets or simply for customer service. The next time you hear about a chatbot, especially in business and travel, remember to look beyond the fancy term. And ask about how it really adds value to your travel program.

Project Overview

A chatbot is programmed to work independently from a human operator. It can answer questions formulated to it in natural language and respond like a real person. It provides responses based on a combination of predefined scripts and machine learning applications.

Here we propose a system where user can use their chat screen as a google search engine without switching to any other window.Here user have to type their question or query in whatever language they want and our system works internally to find out the best possible answer in the desired language .

A chatbot is like a normal application. There is an app layer, a database and APIs to call other external administrations. Users can easily access chatbots, it adds intricacy for the application to handle.

However, there is a common problem that must be tackled. It can't comprehend the plan of the customer. At the moment, bots are trained according to the past information available to them. So, most organizations have a chatbot that maintains logs of discussions. Developers utilize these logs to analyze what clients are trying to ask. With a blend of machine learning tools and models, developers coordinate client inquiries and reply with the best appropriate answer. For example, if any customer is asking about payments and receipts, such as, "where is my product payment receipt?" and "I haven't received a payment receipt?", both sentences are taken to have the same meaning.

If there is no comprehensive data available, then different APIs can be utilized to train the chatbot.

Objective

The aim of a chatbot is to conduct conversation which allows people access to information via a lightweight messaging application. There are currently two distinct types of chatbot:

· Rule-based chatbot: These essentially work as an interactive FAQ. They're programmed to recognize certain terms and patterns from which they can respond with pre-set answers.

· AI chatbot: These act as an artificial brain, using sophisticated cognitive and natural language processing capabilities. It not only understands requests but also context, intent, emotion and it continuously gets smarter as it learns from conversations it has with users.

Chatbots are being made to ease the pain that the industries are facing today. The purpose of chat bots is to support and scale business teams in their relations with customers. It could live in any major chat applications like Facebook Messenger, Slack, Telegram, Text Messages, etc.

Chatbots may sound like a futuristic notion, but according to Global Web Index statistics, it is said that 75% of internet users are adopting one or more messenger platforms. Although research shows us that each user makes use of an average of 24 apps a month, wherein 80% of the time would be in just 5 apps. Undoubtedly among them are Facebook Messenger, Snapchat, Whatsapp, WeChat etc. This means you can hardly shoot ahead with an app, but you still have high chances to integrate your chatbot with one of these platforms.

Wouldn't it be great if someone could ease your pain by helping you out 24*7 making your work easier and less hectic. Chatbots can do just that!!

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Hiring a human for a job is never a cheap affair, and it will be expensive if your revenue are not high or sales targets are not met and would create havoc in the business. Due to the boundaries of human beings, a single human can only handle one or two people at the same time. More than that would be extremely tough for the employee.

chatbot could help solve this age-old problem. As one chatbot is equal to loads of employees, it can easily communicate with thousands of customers at the same time. We would only need a handful of people to jump into conversations sometimes when necessary. Hence, it would drastically bring down the expenses and bring about a steep rise in revenue and customer satisfaction.

2.LITERATURE REVIEW

In 1950, Alan Turing asked the question "Can machines think?" Turing conceptualized the problem as an "imitation game" (now called the Turing Test), in which an "interrogator"asked questions to human and machine subjects, with the goal of identifying the human. If the human and machine are indistinguishable, we say the machine can think.

In 1966, Joseph Weizenbaum at MIT created the first chatbot that, arguably, came close to imitating a human:

Given an input sentence, ELIZA would identify keywords and pattern match those keywords against a set of pre-programmed rules to generate appropriate responses. Since ELIZA, there has been progress in the development of increasingly intelligent chatbots.

In 1972, Kenneth Colby at Stanford created PARRY, a bot the impersonated a paranoid schizophrenic.

In 1995, Richard Wallace created A.L.I.C.E, a significantly more complex bot that generated responses by pattern matching inputs against <pattern> (input) <template> (output) pairs stored in documents in a knowledge base. These documents were written in Artificial Intelligence Markup Language (AIML), an extension of XML, which is still in use today. ALICE is a three-time winner of the Loebner prize, a competition held each year which attempts to run the Turing Test, and awards the most intelligent chatbot.

Modern chatbots include: Amazon's Echo and Alexa, Apple's Siri, and Microsoft's Cortana. .

The architectures and retrieval processes of these bots take advantage of advances in machine learning to provide advanced "information retrieval" processes, in which responses are generated based on analysis of the results of web searches. Others have adopted "generative"models to respond; they use statistical machine translation (SMT) techniques to "translate" input phrases into output responses. Seq2Seq, an SMT algorithm that used recurrent neural networks (RNNs) to encode and decode inputs into responses is a current best practice.

Benchmarking of existing expertise is a very important element of formative research, so the past few weeks the team has been performing a literature review of current thinking and writing on the topic. We've been aggregating these resources into a best-practice library — a chatbot book club of sorts. Since we've committed to a transparent process, it makes sense to publicly share these resources and acknowledge that they will be very important to the team as we move forward with the project.

Much research work has focussed on improving recognition rates of the human voice and the technology is now approaching viability for speech based human computer interaction. Speech Interaction splits into more than one area including: speech recognition, speech parsing, NLP (Natural Language Processing), keyword identification, Chabot design/personality, artificial intelligence etc. Chatbot is a computer program that have the ability to hold a conversation with human using Natural Language Speech

Nowadays it is the era of intelligent machine. With the advancement of artificial intelligent, machine learning and deep learning, machines have started to impersonate as human. Conversational software agents activated by natural language processing is known as chatbot, are an excellent example of such machine. This paper presents a survey on existing chatbots and techniques applied into it. It discusses the similarities, differences and limitations of the existing chatbots. We compared 11 most popular chatbot application systems along with functionalities and technical specifications. Research showed that nearly 75% of customers have experienced poor customer service and generation of meaningful, long and informative responses remains a challenging task. In the past, methods for developing chatbots have relied on hand-written rules and templates. With the rise of deep learning these models were quickly replaced by end-to-end neural networks. More specifically, Deep Neural Networks is a powerful generative-based model to solve the conversational response generation problems. This paper conducted an in-depth survey of recent literature, examining over 70 publications related to chatbots published in the last 5 years. Based on literature review, this study made a comparison from selected papers according to method adopted. This paper also presented why current chatbot models fails to take into account when generating responses and how this affects the quality conversation.

3.SYSTEM ANALYSIS

In a nutshell, Sentiment Analysis is an automated process that programmatically extracts topics from texts and the feeling of the writers towards such topics. It is a well-known and widely used practice in marketing and politics, to prepare and adjust communication strategies.

Chatbots are meant to automate and streamline communication with users, providing immediate responses and improving the customer experience through a friendly, conversational interface. One very common use of chatbots is first-level Customer Support. The purpose of Customer Support, though, goes far beyond the actual help provided to users: it is a valuable source of information about products and services, how do user rate them, what users like and what frustrates them.

Existing system

As a chatbot developer, you can make your bot by scratch by utilizing these platforms' API or SDK :

- Facebook messenger

- Slack

- Kik

- Telegram

- Whatsapp

However, for some businesses that need to rapidly produce an MVP product to validate your idea via chatbots, using existing chatbot builders is obviously a better choice for you. Check out the following services that provide opportunities for those without any programming background to your own chatbots:

- Api.ai

- Motion.ai

- converse.ai

- stamplay

- etc.

Drawbacks

The creation and implementation of chatbots is still a developing area, heavily related to artificial intelligence and machine learning so the provided solutions, while possessing obvious advantages, have some important limitations in terms of functionalities and use cases. However this is changing over time.

The most common ones are listed below.

· As the database, used for output generation, is fixed and limited, chatbots can fail while dealing with an unsaved query.

· Chatbot's efficiency highly depends on language processing and is limited because of irregularities, such as accents and mistakes that can create an important barrier for international and multicultural organisations .

· Chatbots are unable to deal with multiple questions at the same time and so conversation opportunities are limited.

· As it happens usually with technology-led changes in existing services, some consumers, more often than not from the old generation, are uncomfortable with chatbots due to their limited understanding, making it obvious that their requests are being dealt machines.

· It is often considered that chatbots are complicated and need a lot of time to understand what you want in customer. Sometimes, it can also annoy the client about their slowness, or their difficulty in filtering responses.

· Fixed chatbots can get stuck easily. If a query doesn't relate to something you've previously "taught" it, you won't understand it. This can lead to a frustrated customer and the loss of the sale. Other times they do understand you, but they need double (or triple) as many messages as one person, which spoils the user experience.

· Chatbots are installed with the aim of speeding up responses and improving customer interaction. However, due to the limited availability of data and the time needed for self-updating, this process can be slow and costly. Therefore, there are times when instead of serving several customers at once, chatbots may become confused and not serve the customer well.

Proposed System

Whatsapp bot project is built using selenium tool using python language that analyzes user's queries and understand user's message and revert back to give answers

This System is a web application which provides answer to the query of the student. Students just have to query through the bot which is used for chatting.

Students can chat using any format there is no specific format the user has to follow.

The answers are appropriate what the user queries. If the answer found to invalid, user just need to select the invalid answer button which will notify the admin about the incorrect answer.

The User can search and our algorithm will run in background to find the best possible answers for his question.

.

The system answers to the query as if it is answered by the person. With the help of google search, the system answers the query asked by the students.

The system replies on the same chat screen.

The user can query about the college related activities through online with the help of this web application.

Feasibility Study

Economical Feasibility

Bearing the findings from the prototype phase in mind, we develop a minimum viable product (MVP). An MVP is a product with basic functional features, a light version of the ultimate solution that already works with actual data.

The MVP is exposed to a small group of end users in order to gather vital feedback. It is way less expensive to modify the system at this stage, than when it is fully developed.

The cost for a chatbot-related MVP ranges between $10,000 – $20,000, depending on the total project size and complexity.

This makes sense given the impact automation technology could have on cutting labor costs. Although complete automation of the customer service workforce is not feasible, automating customer management and sales positions in the any organization would result in considerable savings.

Twenty-nine percent of customer service positions could be automated through chatbots and other tech, according to Public Tableau.

We estimate this translates to $23 billion in savings from annual salaries, which does not even factor in additional workforce costs like health insurance.

Operational Feasibility

Chatbots are revolutionising the B2E and B2B scenarios along with the B2C space.Almost 85% of global executives believe that AI will allow their companies to obtain or sustain a

competitive advantage .A chatbot architecture should deploy intelligent chatbots, identify and engage with right technology, and should have a multiple channel support among other requirements.

Artificial intelligence & Machine learning — The two words that are on the tip of every technophile tongue. It is fair to say that AI and ML, over the years, have successfully transformed almost every aspect of our personal and more importantly, our professional lives.

Technical Feasibility

- Identify the right use case and the right scope with your client : sometime projects are not feasible technically, not really useful, or even too expensive. Don't hesitate to start small and scale up !

- Design the conversation flows (you can use realtimeboard a great collaborative mind mapping tool, or Bot mock)

- Choose the most appropriate tech stack

- Develop in agile methodology using sprints, test with beta-users, improve the bot flow, the knowledge base, the bot personality…

- Scale up, follow analytics/KPI and compare to objectives you want to achieve.

The foremost question you should be asking is "Where are your users? " which is actually which platforms are being used by your users for the end interaction with the bot. Whether they use voice, chat, web or a normal messenger, you need to figure out what works best for your users. This also includes the mode the bot uses to communicate with its customers.

For instance,

Facebook Messenger, Kiko, Telegram, Line are used as a platform when there is a large audience to cater to. As per Statista, As of the last reported period of April 2014 to April 2017, the mobile messenger had 1.2 billion monthly active users worldwide, ranking second

among mobile chat apps worldwide.Slack could be considered while focusing on startups and developers.

Smart assistants like Google Assistant, Cortana and Amazon Echo could be used when for audience prefers voice-enabled services. .

4. SYSTEM SPECIFICATION

Chatbot technology has hit the market recently. This new piece of software enabled brands with a very intuitive way to communicate with their customers — conversation. This triggered a range of new ideas coming to creative minds.

However, it takes a lot of work to turn a chatbot idea into a project. In fact, it requires a complete step-by-step chatbot strategy starting from goal definition to publishing and maintenance. One of the most important steps in this strategy — documenting product requirements — is focused precisely on shaping a chatbot idea into a working project.

Apparently, the most intuitive way of communication is not that intuitive when it comes to documentation. It seems much easier to sketch a mobile app or a website layout than to explain a dialog. Therefore, a new technology brings a new challenge.

Hardware Requirements

There will be no hardware requirement to build a chatbot. Chatbot is scripted unless it is an AI based chatbot. For software, there are many other platforms on which you can build chatbot, but mostly people use Python to build efficient chatbot. Python is prefered most because it is easy to code in python and it give efficient output. Script or code to develop chatbot in python is easy available on github and stack overflow etc.

Software Requirements

There are many platforms available for creating a chatbot.

Or if we are for sure to create a chatbot from scratch then we would recommend python as the language of choice.

More detailed thought process would be required to think about hardware. All will depend upon the chatbot use case. Number of users who will use, core purpose of the chatbot etc.

We have recently created a chatbot framework that allows one to use and try many platforms and technologies for various purposes like entity extraction, intent identification and content management.

5. PROJECT DESCRIPTION

Problem Definition

Whatsapp chatbot is that makes interactions between man and machines using natural language possible. From literature, we found out that in general, chatbot are functions like a typical search engine. Although chatbot just produced only one output instead of multiple outputs/results, the basic process flow is the same where each time an input is entered, the new search will be done. Nothing related to previous output. This research is focused on enabling chatbot to become a search engine that can process the next search with the relation to the previous search output. In chatbot context, this functionality will enhance the capability of chatbot's input processing.

 In attempt to augment the traditional mechanism of chatbot processes, we used the relational database model approach to redesign the architecture of chatbot in a whole as well as incorporated the algorithm of Extension and Prerequisite (our proposed algorithm). By using this design, we had developed and tested Virtual Diabetes physician (ViDi), a web-based chatbot that function in specific domain of Diabetes education.

Extension and prerequisite enabled relations between responses that significantly make it easier for user to chat with chatbot using the same approach as chatting with an actual human. Chatbot can give different responses from the same input given by user according to current conversation issue.

This is the extended version of the original whatsapp .We made chatbot using whatsapp and trying to solve the more of business usecase rather then general user

Overview of the Project

Here we propose a system where user can use their chat screen as a google search engine without switching to any other window.Here user have to type their question or query in whatever language they want and our system works internally to find out the best possible answer in the desired language .

The chatbot are also known as virtual assistant uses the FAQ to answer questions. The questions which asked must contain specific keywords (Intents/actions) in it so that it will search the answer and respond accordingly .If it did not find that it will reply like I didn't get that.

Module Description

5.3.1 Modules

The modules in a chatbot including user modeling modules understanding module which can perform better by learning continuously.
This module is responsible for obtaining and interpreting the conversation text (convert unstructured data to structured data). Identify the entities in the text (which will be used to understand the intent of the text). i.e., What is the weather in Chennai? Entity-list: Location: Chennai, Measure: weather. We have progressed very well in this section compared to others due to the continuous research in natural language processing.,

Most of these services come with a functional web layer to define the entity, intent, and fulfillment interactively with minimal coding. Some of them also handle the third module NLG along with messenger integrations. It is possible to build a simple chatbot using these services along with a backend API server which serves the business logic. This module is responsible for maintaining the conversation state — context of the dialogue. i.e., where are we in the conversation? Are we at the start or end of the conversation? Do we have all the entity details to execute an API query? It gets tricky here as modeling natural conversation as a state machine is very hard. Conversation can take any route and enforcing constraints and handling edge-cases will be very hard and chaotic. In neural network architecture, nothing maintains a state better than a recurrent neural network with limited data (or a flavour of the RNN like LSTM). This module will see a lot of changes in the near future.

This module talks back to the user. It gets the response from the state machine and then relays the results to the users. Natural language generation is also an active area of research. This module handles the chat user interface (FB messenger or slack). Good javascript libraries are available to manage this BotKit, Caludia.js, and botpress would be a preferable option.

Data Flow Diagram

Obviously this is the most complex part, but I never give any step forward without knowing the previous ones. Once that I got all that information is time to start designing how the chatbot will behave in every possible scenario in its interaction with every user.

I always use X mind for designing the flows from scratch. It's easy to use and really fast if you want to make any changes. The first thing I need to do is create a color legend with every possible item I will include on the chatbot.

Because at this point the scope has been set, I need to take users to the functionalities that I cover. In the e-commerce chatbot I was able to give pictures, opinions, details and prices for technological products. Because the best way to set the scope is making it clear in the welcome message, that is the first thing I write down in X mind. Right after, I point out every possible   scenario   the   bot   will   need   to   deal   wit
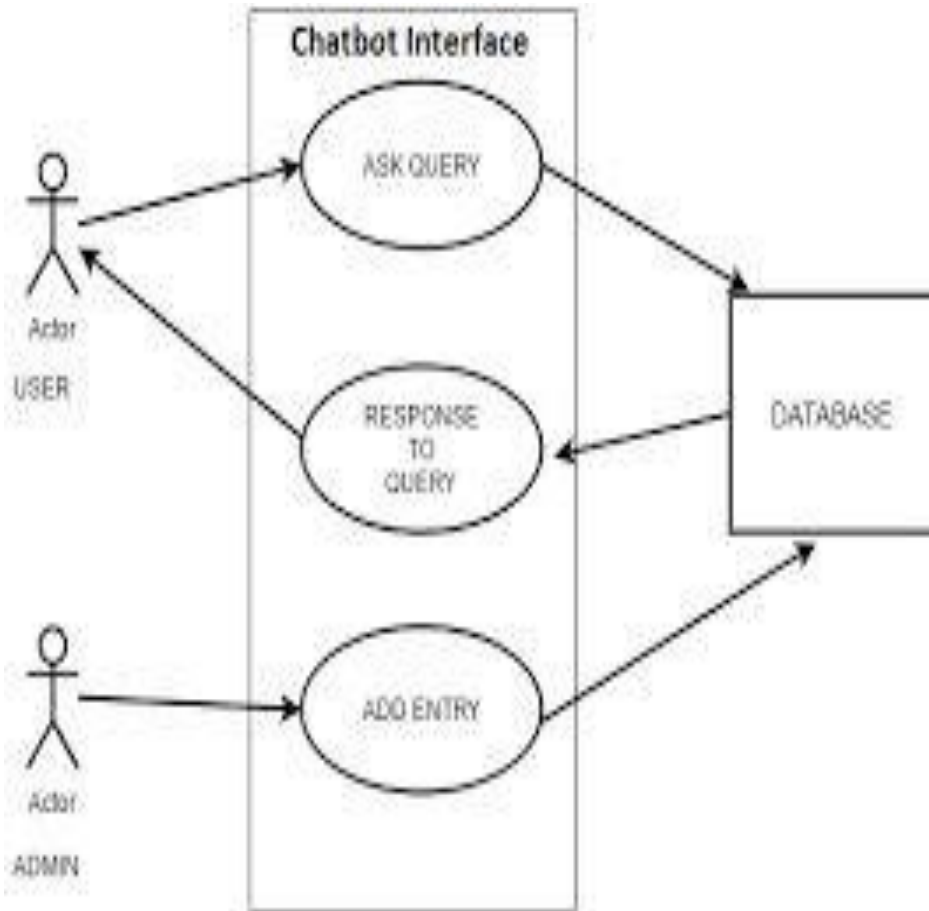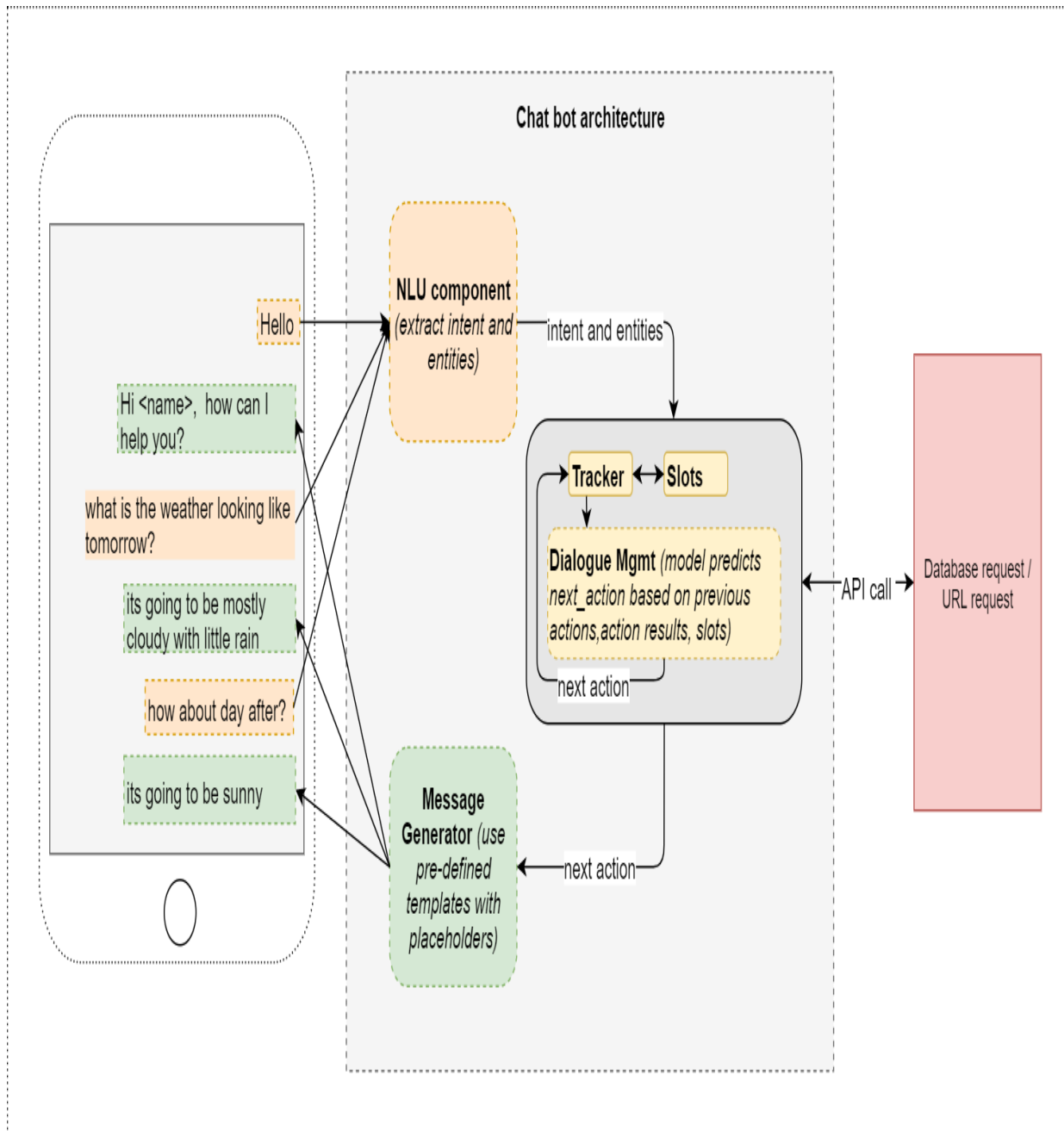
FLOW CHART

Figure 2: FLOW DIAGRAM OF CHATBOT

CONTEXT DIAGRAM

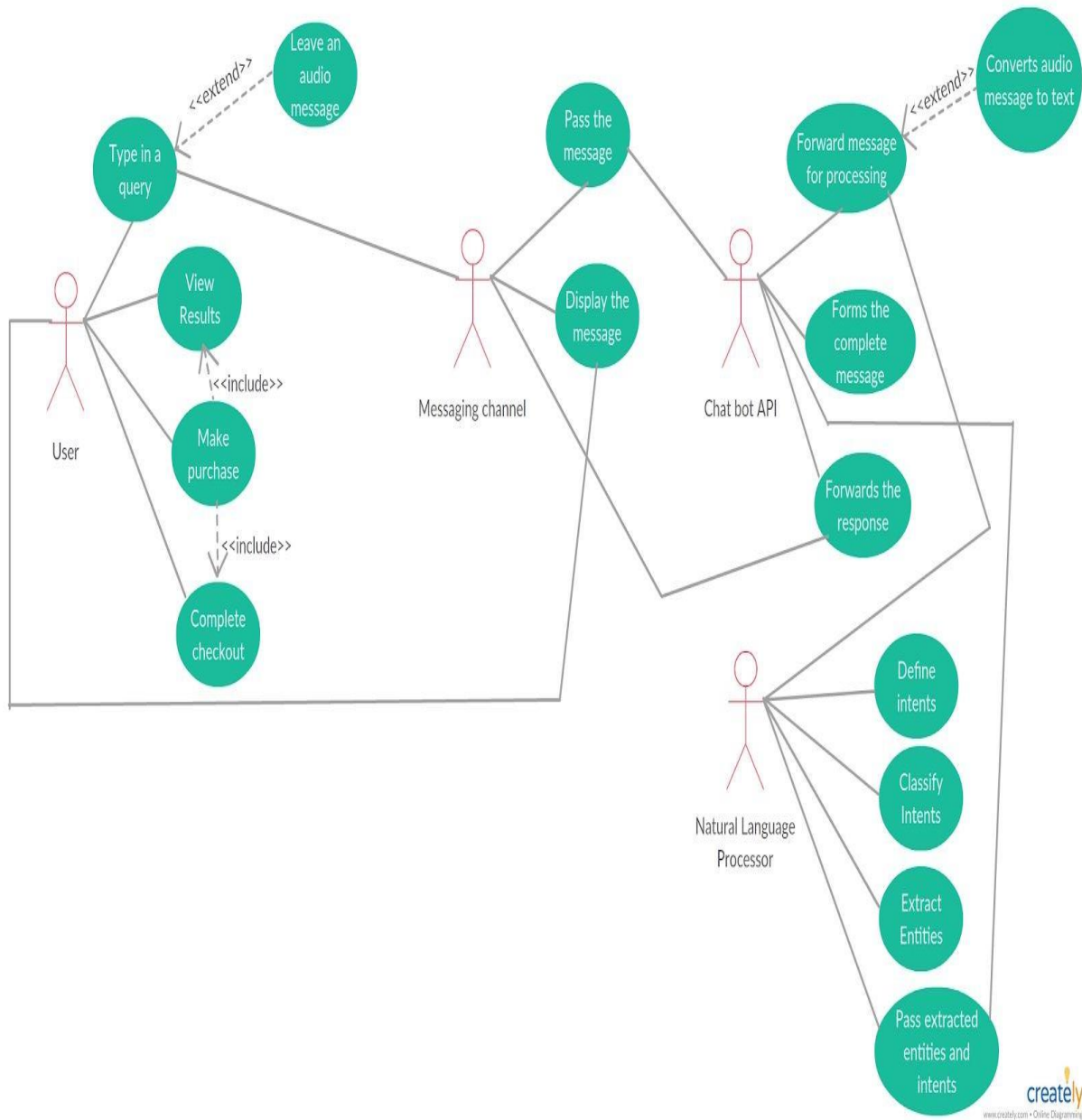Figure 3: CONTEXT DIAGRAM OF CHATBOT

CLASS DIAGRAM

Figure 4: CLASS DIAGRAM FOR CHATBOT

6. IMPLEMENTATION

In the project we tried to classify the product into three categories - positive, negative and neutral sentiment analysis. Figure represents the implementation process. The implementation steps may include,
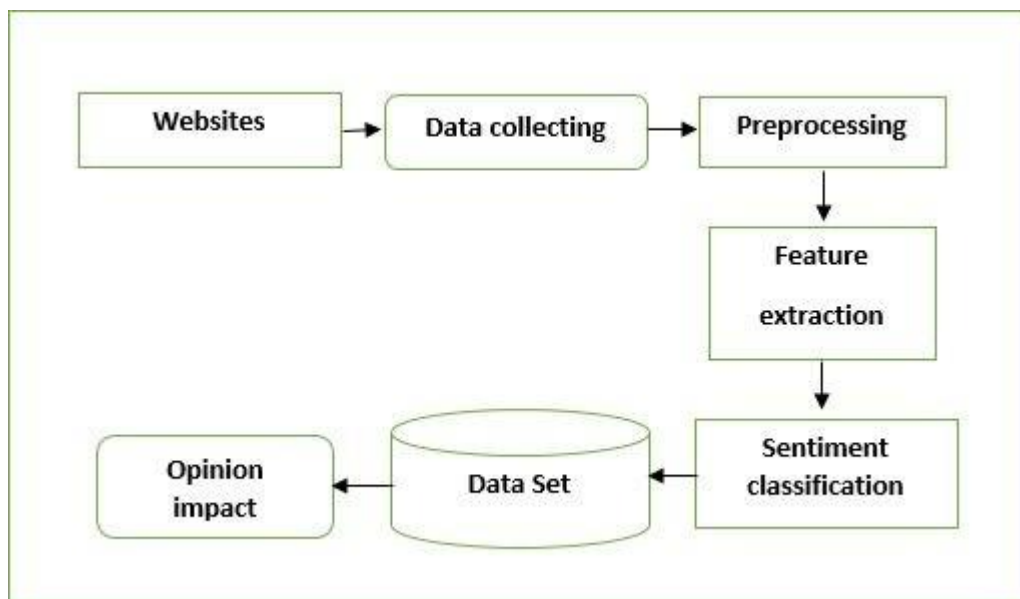

Figure 5: Feature Extraction Process

DATA COLLECTION

Data collection is the way to collect the basic data or document on which work is done.Consumers express their sentiments about particular products on e-commerce websites like amazons. Their sentiments and opinions are expressed in different way, with different vocabulary, context of writing, usage of short forms and slang, making the data huge and disorganized. Manual analysis of sentiment data is virtually impossible. Therefore, we uses The sentiment analysis to make this effort easy. Here we collect the data set from uc brekely named as cornell movies.

PREPROCESSING

The preprocessing is nothing but filtering the extracted data before analysis. It includes identifying and eliminating non-textual content and content that is irrelevant to the area of study from the data.

Of all data, text is the most unstructured form and so means we have a lot of cleaning to do.These pre-processing steps help convert noise from high dimensional features to the low dimensional space to obtain as much accurate information as possible from the text.

Preprocessing data can consist of many steps depending on the data and the situation. Some of them are:

• Tokenization

• Stopwords

• Normalization

• Casing the character

• Negation handling

• Removing

• Substituo

7. TESTING

Testing is the process of evaluating a system or its components with the intent to find that whether it satisfies the specified requirements or not. This activity results in the actual, expected and difference between their results i.e. testing is executing a system in order to identify any gaps, errors or missing requirements in contrary to the actual desire or requirements.

Testing Strategies

In order to make sure that system does not have any errors, the different levels of testing strategies that are applied at different phases of software development are
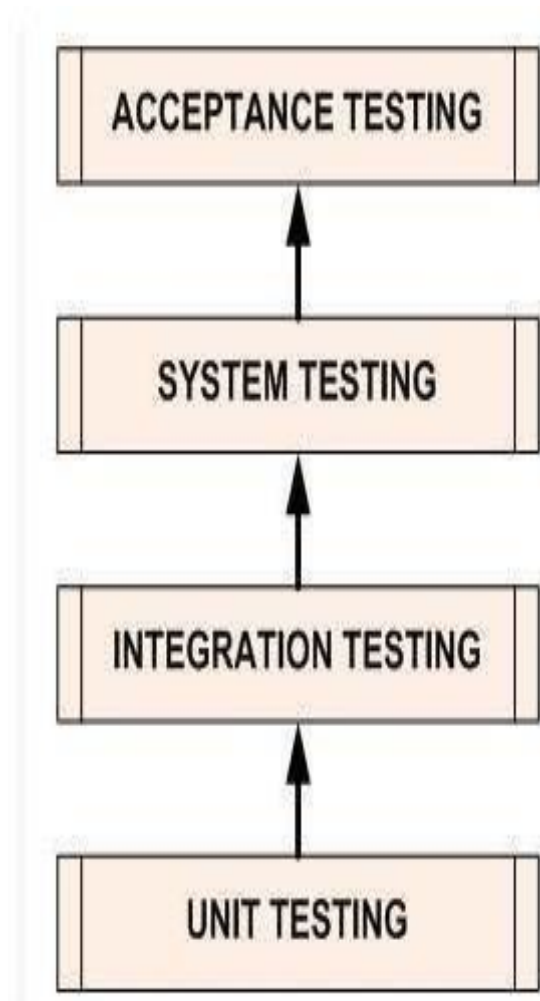

Figure 10: PHASES OF TESTING

Unit Testing

The goal of unit testing is to isolate each part of the program and show that individual parts are correct in terms of requirements and functionality.

Integration Testing

The testing of combined parts of an application to determine if they function correctly together is Integration testing. This testing can be done by using two different methods.

Top Down Integration testing

In Top-Down integration testing, the highest-level modules are tested first and then progressively lower-level modules are tested.

Bottom-up Integration testing

Testing can be performed starting from smallest and lowest level modules and proceeding one at a time. When bottom level modules are tested attention turns to those on the next level that use the lower level ones they are tested individually and then linked with the previously examined lower level modules. In a comprehensive software development environment, bottom-up testing is usually done first, followed by top-down testing.

System Testing

This is the next level in the testing and tests the system as a whole.Once all the components are integrated, the application as a whole is tested rigorously to see that it meets Quality Standards.

Acceptance Testing

The main purpose of this Testing is to find whether application meets the intended specifications and satisfies the client's requirements. We will follow two different methods in this testing.

Alpha Testing

This test is the first stage of testing and will be performed amongst the teams. Unit testing, integration testing and system testing when combined are known as alpha testing. During this phase, the following will be tested in the application:

- Spelling Mistakes.

- Broken Links.

- The Application will be tested on machines with the lowest specification to test loading times and any latency problems.

Beta Testing

In beta testing, a sample of the intended audience tests the application and send their feedback to the project team. Getting the feedback, the project team can fix the problems before releasing the software to the actual users.

Testing Methods

White Box Testing

White box testing is the detailed investigation of internal logic and structure of the Code. To perform white box testing on an application, the tester needs to possess knowledge of the internal working of the code. The tester needs to have a look inside the source code and find out which unit/chunk of the code is behaving inappropriately.

The technique of testing without having any knowledge of the interior workings of the application is Black Box testing. The tester is oblivious to the system architecture and does not have access to the source code. Typically, when performing ablackbox test, a tester will interact with the system's user interface by providing inputs and examining outputs without knowing how and where the inputs are worked upon.

Validation

All the levels in the testing (unit, integration, system) and methods (black box, white box) are implemented on our application successfully and the results obtained as expected.
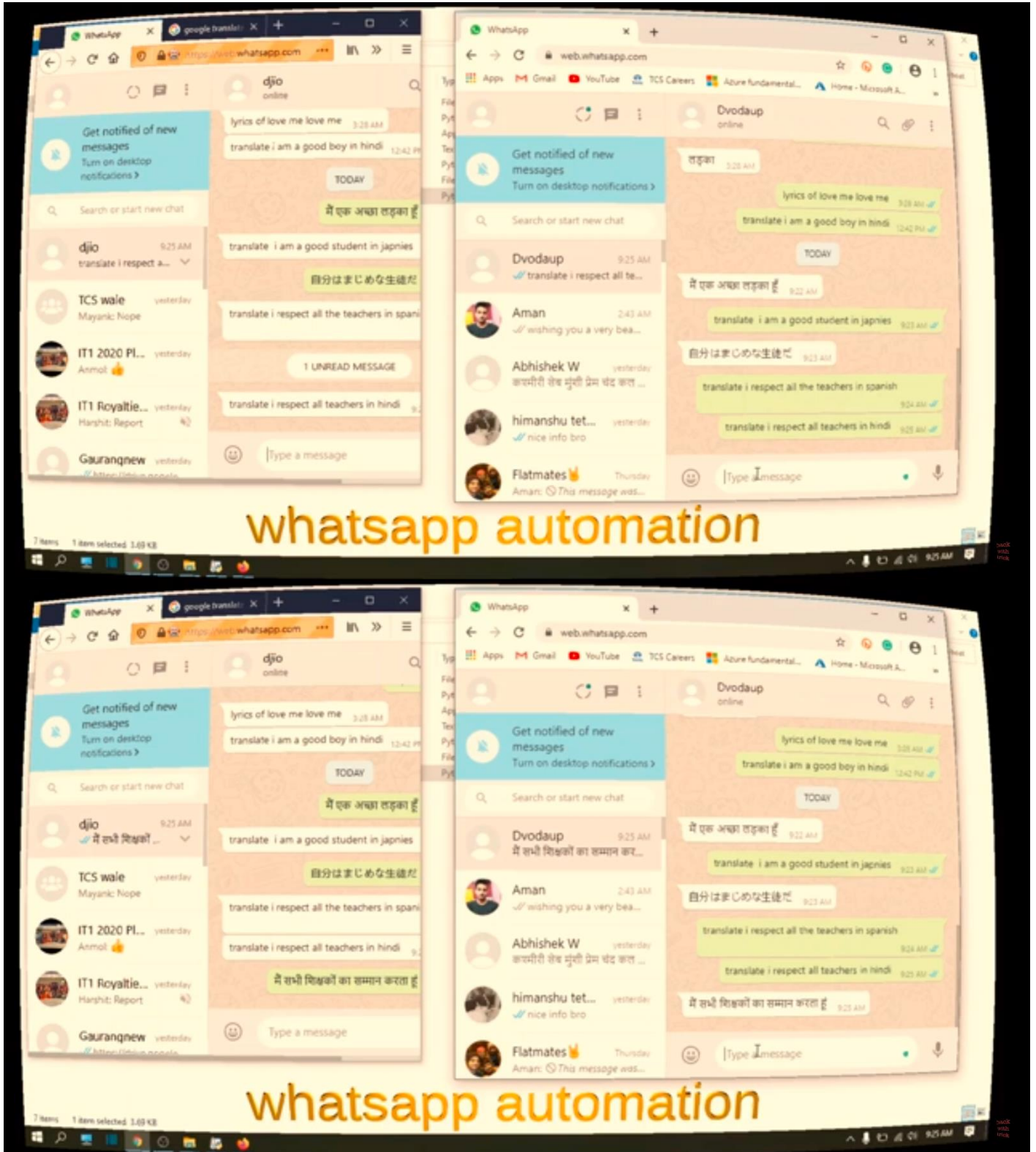
Limitations

The execution time for support vector machine is more so that the user may not receive the result fast.

Test Results

The testing is done among the team members and by the end users. It satisfies the specified requirements and finally we obtained the results as expected.

8 RESULT

For the result we have attached the link of result in action.

9 FUTURE SCOPE

FUTURE SCOPE OF APPLICATION:

We can implement AI to give specific answers to users as per their question. We can integrate real time chat and answer fetching directly from google using AI to be more specific on user query.

SOFTWARE SCOPE:

Extensibility: This software is extendable in ways that its original developers may not expect. The following principles enhances extensibility like hide data structure, avoid traversing multiple links or methods, avoid case statements on object type and distinguish public and private operations.

Reusability: Reusability is possible as and when require in this application. We can update it next version. Reusable software reduces design, coding and testing cost by amortizing effort over several designs. Reducing the amount of code also simplifies understanding, which increases the likelihood that the code is correct. We follow up both types of reusability: Sharing of newly written code with in a project and reuse of previously written code on new projects.

Understandability: A method is understandable if someone other than the creator of the method can understand the code (as well as the creator after a time lapse). We use the method, which small and coherent helps to accomplish this.

Cost-effectiveness: Its cost is under the budget and make within given time period. It is desirable to aim for a system with a minimum cost subject to the condition that it must satisfy the entire requirement.
Scope of this document is to put down the requirements, clearly identifying the information needed by the user.

10 CONCLUSION

From my perspective, whatsapp chatbots or smart assistants is dramatically changing businesses. There is a wide range of chatbot building platforms and also wide range of chatbot types that are available for various enterprises, such as e-commerce, retail, banking, leisure, travel, healthcare, and so on but due to this apprich we want to make more user centric chatbot which will help both user and business to handle huge customer base at a time.

Chatbots can reach out to a large audience on messaging apps and be more effective than humans. They may develop into a capable information-gathering tool in the near future.

These days, consumers expect to be able to find the information they're looking for online quickly and easily. And when a business can't provide that type of experience, they become frustrated. Chatbots are poised to ease these frustrations by providing the real-time, on-demand approach that consumers are seeking out.

The top three potential benefits of chatbots that consumers reported in our survey:

1. 24-hour service (64%)
2. instant responses (55%)
3. answers to simple questions (55%)
4. Direct google search

And that's true across all age groups. It's not just Millennials who see the potential benefits of chatbots. In fact, Baby Boomers were 24% more likely to to expect benefits from chatbots in five of the nine categories we looked at compared to their Millennial counterparts.

However, chatbots — like all technologies — aren't without their limitations: 43% of consumers said they prefer dealing with an actual person (that was the number one potential barrier to using chatbots). That being said, 34% of consumers also predicted that they would use chatbots for getting connected with a human. So it doesn't have to be either/or. As a

business, you can use chatbots to supplement your human workforce (not replace them).

Compared to other business communication channels, chatbots scored the second-highest

when it came to consumers expecting instant responses, only losing out to online chat. But by using chatbots in combination with online chat, businesses can deliver a level of real-time service that they'd be unable to achieve using either technology on its own.

And while chatbots can't replace phone or email when it comes to providing in-depth answers to technical questions (some things will always require a human touch), they are poised to become the new apps. As you saw in the previous section, chatbots outperformed apps in the following five benefits categories:

1. Quick answers to simple questions (Chatbots, 69% | Apps, 51%)
2. Getting 24-hour service (Chatbots, 62% | Apps, 54%)
3. Quick answers to complex questions (Chatbots, 38% | Apps, 28%)
4. Ability to easily register a complaint (Chatbots, 38% | Apps, 28%)
5. Getting detailed / expert answers (Chatbots, 28% | Apps, 27%)

There's been a lot of hype around chatbots recently, and we hope this report has helped to separate fact from fantasy. Ultimately, we see chatbots as a technology that can help bridge the gaps between business communication channels, and that can help deliver a better, speedier online experience to consumers.

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