**REPORT FOR CHATBOT**

As a project work for Course

**ARTIFICIAL INTELLIGENCE (INT 404)**

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DATE OF SUBMISSION : 29 March,2020

ABSTRACT:-

1. A computer program designed to simulate conversation with human users, especially over the Internet.

[2.](https://image.slidesharecdn.com/antraaa-181127090143/95/chatbot-abstract-2-638.jpg?cb=1543309514) Examples of Chatbot:-Eliza, Cortana, Siri

[3.](https://image.slidesharecdn.com/antraaa-181127090143/95/chatbot-abstract-3-638.jpg?cb=1543309514) • Productivity : Chatbots provide the assistance or access to information quickly and efficiently. • Entertainment : Chatbots amuse people by giving them funny tips, they also help killing time when users have nothing to do. Factors of Motivation

[4.](https://image.slidesharecdn.com/antraaa-181127090143/95/chatbot-abstract-4-638.jpg?cb=1543309514) Social and relational factors : Chatbots fuel conversions and enhance social experiences. Chatting with bots also helps to avoid loneliness, gives a chance to talk without being judged. Curiosity : The novelty of chatbots sparks curiosity. People want to explore their abilities and to try something new.

[5.](https://image.slidesharecdn.com/antraaa-181127090143/95/chatbot-abstract-5-638.jpg?cb=1543309514) How it all started? Eliza – the first chat bot was made by Joseph Weizenbaum. Working of Eliza is based on - Knowledge Representation - Pattern Recognition - Substitution of key words into known phrases.

[6.](https://image.slidesharecdn.com/antraaa-181127090143/95/chatbot-abstract-6-638.jpg?cb=1543309514) •Simple chatbots work based on pre-written keywords that they understand. Each of these commands must be written by the developer separately using regular expressions or other forms of string analysis. If the user has asked a question without using a single keyword, the bot can not understand it and, as a rule, responds with messages like “sorry, I did not understand”. Types of Chatbots

[7.](https://image.slidesharecdn.com/antraaa-181127090143/95/chatbot-abstract-7-638.jpg?cb=1543309514) Smart chatbots rely on artificial intelligence when they communicate with users. Instead of pre-prepared answers, the bot responds with adequate suggestions on the topic.

[8.](https://image.slidesharecdn.com/antraaa-181127090143/95/chatbot-abstract-8-638.jpg?cb=1543309514) How is the Chatbot trained?• Training a chatbot happens at much faster and larger scale than we teach a human. • For example:-Humans Customer Service Representatives are given manuals and have them read it and understand. • While the Customer Support Chatbot is fed with thousands of conversation logs and from those logs, the chatbot is able to understand what type of question requires what type of answers.

[9.](https://image.slidesharecdn.com/antraaa-181127090143/95/chatbot-abstract-9-638.jpg?cb=1543309514) • For example: If a customer is asking , “Where is my payment receipt?” and “I have not received a payment receipt”, mean the same thing. • Developers strength is in training The models so that the chatbot is able to connect both of those questions to correct intent and as an output produces the correct answer.

[10.](https://image.slidesharecdn.com/antraaa-181127090143/95/chatbot-abstract-10-638.jpg?cb=1543309514) Once the chatbot is ready and is live interacting with customers, smart feedback loops can be implemented. During the conversation when customers ask a question, chatbot smartly give them a couple of answers by providing different options like “Did you mean a, b or c”. That way customers themselves matches the questions with actual possible intents and that information can be used to retrain the machine learning model, hence improving the chatbot’s accuracy. How does the chatbot learn after it is live?

[11.](https://image.slidesharecdn.com/antraaa-181127090143/95/chatbot-abstract-11-638.jpg?cb=1543309514) Despite, there are limitations in place assuring that the model should not change based on new replies where users are not driving the bot in right direction. Chatbot will also not just rephrase what the people say in the chat but it is indeed taught to answer things that the bot’s owner wants it to answer.

[12.](https://image.slidesharecdn.com/antraaa-181127090143/95/chatbot-abstract-12-638.jpg?cb=1543309514) • There is a general worry that the bot can’t understand the intent of the customer. • The bots are first trained with the actual data. • Most companies that already have a chatbot must be having logs of conversations. How can chatbot process human language?

[13.](https://image.slidesharecdn.com/antraaa-181127090143/95/chatbot-abstract-13-638.jpg?cb=1543309514) • Developers use that logs to analyze what customers are trying to ask and what does that mean. • With a combination of Machine Learning models and tools built, developers match questions that customer asks and answers with the best suitable answer.

[14.](https://image.slidesharecdn.com/antraaa-181127090143/95/chatbot-abstract-14-638.jpg?cb=1543309514) •Reduced costs – chatbots eliminate the requirement of any manpower during online interaction. • 24-7 availability – Chatbots once installed, are available 24 × 7. Advantages

[15.](https://image.slidesharecdn.com/antraaa-181127090143/95/chatbot-abstract-15-638.jpg?cb=1543309514) • Learning and Updating – AI-based chatbots are capable of learning from interactions and updating themselves on their own. • Multiple Customer Handling – Humans have a limit to the number of clients they can handle at once. However, with chatbots, there is no such constraint and they can handle as many queries as required at once.

[16.](https://image.slidesharecdn.com/antraaa-181127090143/95/chatbot-abstract-16-638.jpg?cb=1543309514) •Complex Interface – Chatbots often require a lot of time to understand user’s requirement. •Inability to Understand – Due to fixed programs, chatbots can be stuck if an unsaved query is presented in front of them. This can lead to customer dissatisfaction and result in loss. Disadvantages

[17.](https://image.slidesharecdn.com/antraaa-181127090143/95/chatbot-abstract-17-638.jpg?cb=1543309514) • Time-Consuming – Chatbots are installed with the motive to speed-up the response and improve customer interaction. However, due to limited data- availability and time required for self-updating, this process appears more time-taking and expensive. • Increased Installation Cost – Every chatbot needs to be programmed differently for a new business which increases the initial installation cost. This also increases the time needed to prepare for the program.

[18.](https://image.slidesharecdn.com/antraaa-181127090143/95/chatbot-abstract-18-638.jpg?cb=1543309514) •E-commerce bots: From ordering pizza to ordering shoes. •Event reservation – restaurant reservations, doctor appointments, movie tickets etc. •Travel bots – from saving you money on booking flights to helping you connect with locals and tourist guides. Application s

[19.](https://image.slidesharecdn.com/antraaa-181127090143/95/chatbot-abstract-19-638.jpg?cb=1543309514) • Next-generation chatbots will become increasingly utilitarian. •Chatbots will become more specialised. •As bots become more specialised and popular, they will proliferate; managing them could become as overwhelming as managing apps is today. Future Scope.

ACKNOWLEDGEMNT:-

We have taken efforts in this project. However, it would not have been possible without the kind support and help of many individuals and organisations. We would like to extend my sincere thanks to all of them.

We are highly indebted to Sagar Pandey Sir for their guidance and constant supervision as well as for providing necessary information regarding the project & also for their support in completing the project.

We would like to express our gratitude towards our parents & member of Lovely Professional University for their kind co-operation and encouragement which help us in completion of this project.

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**INTRODUCTION:-**

A bot is a software application that performs automated task and chatbots come under the category of bots that live in various chat platforms. A chatbot can converse with humans so the idea of conversation is primary to a chatbot.

Essentially chatbots are of two types:

**Command based**: Chatbots that function on predefined rules and can answer to only limited queries or questions. Users need to select an option to determine their next step.

**Intelligent/AI Chatbots**: Chatbots that leverage Machine Learning and Natural Language Understanding to understand the user’s language and are intelligent enough to learn from conversations with their users.

Chatbots run on platforms such a Facebook Messenger, Slack, Telegram, Skype, SMS and even on websites. Each platform has its own salient features which determine the possible ways in which the chatbot can interact with the user, however, the actual behaviour of the chatbot is determined by the bot itself.

AI is revolutionising businesses and chatbots powered by AI are becoming a feasible customer service channel. Interacting with a brand or a business has become easy for customers.

The purpose of chatbots is to scale business teams and help them in maintaining a cordial relationship with their customers. This helps businesses cut down on operational costs, save time and ensure lucrative productivity as all the basic and monotonous requests are handled by the chatbot while complex queries are taken care of by the support team.

Chatbots can help customers make e-commerce purchases, answer customer service questions, monitor employee’s or customer’s satisfaction, improve response rate from customers, deliver a personalised experience, derive business intelligence, automate repetitive tasks and we can actually come up with a chatbot use case for every single business or industry.

Retrieval Based Model :-

A close up of a sign

Description automatically generated

Generative Based Model :-

**A close up of a sign

Description automatically generatedTEAM MEMBERS WITH THEIR ROLE:-**

**(1)Tushar Rao**

**Contribution:-**

(1)Coding

(2)Dataset

(3)Report

(4)Train log

**(2)Mukesh Ghosh**

**Contribution:-**

(1)Coding

(2)Package Needed

(3)Database

(4)Report**LIBRARIES:-**

**(1)Flask:-**

Flask is a lightweight [WSGI](https://wsgi.readthedocs.io/) web application framework. It is designed to make getting started quick and easy, with the ability to scale up to complex applications. It began as a simple wrapper around [Werkzeug](https://www.palletsprojects.com/p/werkzeug/) and [Jinja](https://www.palletsprojects.com/p/jinja/) and has become one of the most popular Python web application frameworks.

Flask offers suggestions, but doesn’t enforce any dependencies or project layout. It is up to the developer to choose the tools and libraries they want to use. There are many extensions provided by the community that make adding new functionality easy

**(2)Date-Time:-**

In Python, date and time are not a data type of its own, but a module named date-time can be imported to work with the date as well as time. Date-time module comes built into Python, so there is no need to install it externally. Date-time module supplies classes to work with date andtime.

**(3)Chatterbot:-**

ChatterBot is a Python library that makes it easy to generate automated responses to a user’s input. ChatterBot uses a selection of machine learning algorithms to produce different types of responses. This makes it easy for developers to create chat bots and automate conversations with users.

**(4)Url lib:-**

url-lib is a package that collects several modules for working with URLs:

* [urllib.request](https://docs.python.org/3/library/urllib.request.html#module-urllib.request) for opening and reading URLs
* [urllib.error](https://docs.python.org/3/library/urllib.error.html#module-urllib.error) containing the exceptions raised by [urllib.request](https://docs.python.org/3/library/urllib.request.html#module-urllib.request)
* [urllib.parse](https://docs.python.org/3/library/urllib.parse.html#module-urllib.parse) for parsing URLs
* [urllib.robotparser](https://docs.python.org/3/library/urllib.robotparser.html#module-urllib.robotparser) for parsing robots.txt files

**(5)OS:-**

The OS module in python provides functions for interacting with the operating system. OS, comes under Python’s standard utility modules. This module provides a portable way of using operating system dependent functionality. The os and os.path modules include many functions to interact with the file system.

**(6)PIL:-**

PIL is the Python Imaging Library which provides the python interpreter with image editing capabilities.

PIL.Image.new() method creates a new image with the given mode and size. Size is given as a (width, height)-tuple, in pixels. The colour is given as a single value for single-band images, and a tuple for multi-band images (with one value for each band).

We can also use colour names. If the colour argument is omitted, the image is filled with zero (this usually corresponds to black). If the colour is None, the image is not initialised. This can be useful if you’re going to paste or draw things in the image.

**Syntax:**

PIL.Image.new(mode, size)

PIL.Image.new(mode, size, colour)

**Applications:-**

**1. Accessible anytime:**

I’m sure most of you are always kept on hold while operators connect you to a customer care executive. On an average people spend around 7 minutes until they are assigned to a person. Gone are the frustrating days of waiting in a queue for the next available operative. They are replacing live chat and other forms of slower contact methods such as emails and phone calls.

**2. Handling Capacity:**

Unlike humans who can only communicate with one human at a time, chat bots can simultaneously have conversations with thousands of people. No matter what time of the day it is or how many people are contacting you, every single one of them will be answered immediately.

**3. Flexible attribute:**

Chatbots have the benefit that it can quite easily be used in any industry. Unlike other products where you have to do a lot of development and testing to change platforms, chatbots are relatively easy to switch. One has to just train the bot by giving the right conversation structure and flow to switch its current field or industry.

**4. Customer Satisfaction:**

Humans are bound to change of emotions. Chatbots, on the other hand, are bound by some rules and obey them as long as they’re programmed to. They will always treat a customer in the perfect way no matter how rough the person is or how foul language the person uses.

**5. Cost Effective:**

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

**6. Faster Onboarding:**

Before you want to accomplish a task, you first must learn how to work on the task and complete it. Only then will they be considered fit for the job. There is a continuous teaching involved in every level of hierarchy the employee will go through. Also, there will be a lot of change in the employees, some stay, some get fired, some more join in etc.

**7. Work Automation:**

People tend to be less productive when given a recurring job or work. We humans usually get bored doing the same thing over and over again. Chatbots can now automate tasks which are to be done frequently and at the right time. And now there are already [numerous slack bots](https://slack.com/apps/category/At0MQP5BEF-bots) which automate repetitive tasks. This helps people save time and be more productive.

**9. Personal Assistant:**

People could use Bots as personal fashion advisor for clothing recommendations, or ask trading tips from a finance bot, suggest places to visit from a travel bot and so forth. This would help the users get a more personal touch from the chatbot. Also, the chatbot will remember all your choices and provide you with relevant choices the next time you visit it. Notable examples are Trim, a personal finance bot; Taylor — travel assistant, CNN bot for personalised news.**Conclusion:-**

From our perspective, chatbots or smart assistants with artificial intelligence are dramatically changing businesses. There is a wide range of chatbot building platforms that are available for various enterprises, such as e-commerce, retail, banking, leisure, travel, healthcare, and so on.

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.