

Assignment No:

Title of the Assignment: Chatbot application

Problem statement: Develop an elementary chatbot for any suitable customer interaction application.

Objective:

- To understand the Chatbot application.
- To implement an elementary chatbot application for customer interaction.

Theory:

A chatbot is software that simulates human-like conversations with users via text messages on chat. Its key task is to help users by providing answers to their questions. Chatbots are programs built to automatically engage with received messages. Chatbots can be programmed to respond the same way each time, to respond differently to messages containing certain keywords and even to use machine learning to adapt their responses to fit the situation.

Chatbots leverage chat mediums like SMS text, website chat windows and social messaging services across platforms like Facebook and Twitter to receive and respond to messages.

Why add a chatbot to website?

When businesses add a chatbot to their support offerings, they're able to serve more customers, improve first response time, and increase agent efficiency. Chatbots help mitigate the high volume of rote questions that come through via email, messaging, and other channels by empowering customers to find answers on their own and guiding them to quick solutions.

When chatbots take simple, repetitive questions off a support team's plate, they give agents time back to provide more meaningful support—nothing kills team productivity like forcing employees to do work that could be automated. Bots can also integrate into global support efforts and ease the need for international hiring and training. They're a cost-effective way to deliver instant support that never sleeps—over the weekends, on holidays, and in every time zone.

The Value of Chatbots:

One way to stay competitive in modern business is to automate as many of your processes as possible. Evidence of this is seen in the rise of self-checkout at grocery stores and ordering kiosks at restaurants.

Amazon just opened a store without any cashiers or self-checkouts, limiting human interactions to those only absolutely necessary.

The value in chatbots comes from their ability to automate conversations throughout the organization.

Below are five key benefits businesses realize when using chatbots.

1. Save Time & Money
2. Generate Leads & Revenue
3. Guide Users to Better Outcomes
4. Provide 'After Hours' Support
5. Engage Users in a Unique Way

Limitations With A Chatbot

With increasing advancements, there also comes a point where it becomes fairly difficult to work with the chatbots. Following are a few limitations we face with the chatbots.

- **Domain Knowledge** – Since true artificial intelligence is still out of reach, it becomes difficult for any chatbot to completely fathom the conversational boundaries when it comes to conversing with a human.
- **Personality** – Not being able to respond correctly and fairly poor comprehension skills has been more than frequent errors of any chatbot, adding a personality to a chatbot is still a benchmark that seems far far away. But we are more than hopeful with the existing innovations and progress-driven approaches.

The chatbots can be defined into two categories; following are the two categories of chatbots:

1. **Rule-Based Approach** – In this approach, a bot is trained according to rules. Based on this a bot can answer simple queries but sometimes fails to answer complex queries.
2. **Self-Learning Approach** – These bots follow the machine learning approach which is rather more efficient and is further divided into two more categories.
 - **Retrieval-Based Models** – In this approach, the bot retrieves the best response from a list of responses according to the user input.
 - **Generative Models** – These models often come up with answers than searching from a set of answers which makes them intelligent bots as well.

Few applications across Industries:

According to a new survey, 80% of businesses want to integrate chatbots in their business model by 2020. According to a chatbot, these major areas of direct-to-consumer engagement are prime:

Chatbots in Restaurant and Retail Industries

Famous restaurant chains like Burger King and Taco bell has introduced their Chatbots to stand out of competitors of the Industry as well as treat their customers quickly. Customers of these restaurants are greeted by the resident Chatbots, and are offered the menu options- like a counter order, the Buyer chooses their pickup location, pays, and gets told when they can head over to grab their food. Chatbots also works to accept table reservations, take special requests and go take the extra step to make the evening special for your guests. Chatbots are not only good for the restaurant staff in reducing work and pain but can provide a better user experience for the customers.

Chatbots in Hospitality and Travel

For hoteliers, automation has been held up as a solution for all difficulties related to productivity issues, labour costs, a way to ensure consistently, streamlined production processes across the system. Accurate and immediate delivery of information to customers is a major factor in running a successful online Business, especially in the price sensitive and competitive Travel and Hospitality industry. Chatbots particularly have gotten a lot of attention from the hospitality industry in recent months.

Chatbots in Health Industry

Chatbots are a much better fit for patient engagement than Standalone apps. Through these Health-Bots, users can ask health related questions and receive immediate responses. These responses are either original or based on responses to similar questions in the database. The impersonal nature of a bot could act as a benefit in certain situations, where an actual Doctor is not needed. Chatbots ease the access to healthcare and industry has favourable chances to serve their customers with personalised health tips. It can be a good example of the success of Chatbots and Service Industry combo.

Chatbots in E-Commerce

Mobile messengers- connected with Chatbots and the E-commerce business can open a new channel for selling the products online. E-commerce Shopping destination “Spring” was the early adopter. E-commerce future is where brands have their own Chatbots which can interact with their customers through their apps.

Chatbots in Fashion Industry

Chatbots, AI and Machine Learning pave a new domain of possibilities in the Fashion industry, from Data Analytics to Personal Chatbot Stylists. Fashion is such an industry where luxury goods can only be bought in a few physical boutiques and one to one customer service is essential. The Internet changed this dramatically, by giving the customers a seamless but a very impersonal experience of shopping. This particular problem can be solved by Chatbots. Customers can be treated personally with bots, which can exchange messages, give required suggestions and

information. Famous fashion brands like Burberry, Tommy Hilfiger have recently launched Chatbots for the London and New York Fashion Week respectively. Sephora a famous cosmetics brand and H&M– a fashion clothing brand have also launched their Chatbots.

Chatbots in Finance

Chatbots have already stepped in Finance Industry. Chatbots can be programmed to assist the customers as Financial Advisor, Expense Saving Bot, Banking Bots, Tax bots, etc. Banks and Fintech have ample opportunities in developing bots for reducing their costs as well as human errors. Chatbots can work for customer's convenience, managing multiple accounts, directly checking their bank balance and expenses on particular things. Further about Finance and Chatbots have been discussed in our earlier blog: Chatbots as your Personal Finance Assistant.

Chatbots in Fitness Industry

Chat based health and fitness companies using Chatbot, to help their customers get personalised health and fitness tips. Tech based fitness companies can have a huge opportunity by developing their own Chatbots offering huge customer base with personalised services. Engage with your fans like never before with news, highlights, game-day info, roster and more. Chatbots and Service Industry together have a wide range of opportunities and small to big all size of companies using chatbots to reduce their work and help their customers better.

Chatbots in Media

Big publisher or small agency, our suite of tools can help your audience chatbot experience rich and frictionless. Famous News and Media companies like The Wall Street Journal, CNN, Fox news, etc have launched their bots to help you receive the latest news on the go.

Chatbot in Celebrity

With a chatbot you can now have one-on-one conversation with millions of fans.

Languages and technologies:

Good knowledge of back-end technologies and analytics.

Languages used for developing chatbots are Java, C#, Python, and Node JS.

To be able to answer arbitrary questions and to develop these smart robots, a deep understanding of machine learning, artificial intelligence, Natural Language Understanding (NLU), and Google Cloud Natural Language API (Application Programming Interface) is required.

Sample Chatbot program:

```

def greet(bot_name, birth_year):
    print("Hello! My name is {0}.".format(bot_name))
    print("I was created in {0}.".format(birth_year))

def remind_name():
    print('Please, remind me your name.')
    name = input()
    print("What a great name you have, {0}!".format(name))

def guess_age():
    print('Let me guess your age.')
    print('Enter remainders of dividing your age by 3, 5 and 7.')

    rem3 = int(input())
    rem5 = int(input())
    rem7 = int(input())
    age = (rem3 * 70 + rem5 * 21 + rem7 * 15) % 105

    print("Your age is {0}; that's a good time to start
programming!".format(age))

def count():
    print('Now I will prove to you that I can count to any number you
want.')
    num = int(input())

    counter = 0
    while counter <= num:
        print("{0} !".format(counter))
        counter += 1

def test():
    print("Let's test your programming knowledge.")
    print("Why do we use methods?")
    print("1. To repeat a statement multiple times.")
    print("2. To decompose a program into several small subroutines.")
    print("3. To determine the execution time of a program.")
    print("4. To interrupt the execution of a program.")

    answer = 2
    guess = int(input())
    while guess != answer:
        print("Please, try again.")
        guess = int(input())

```

```

print('Completed, have a nice day!')
print('.....')
print('.....')
print('.....')

def end():
    print('Congratulations, have a nice day!')
    print('.....')
    print('.....')
    print('.....')
    input()

greet('Sbot', '2021') # change it as you need
remind_name()
guess_age()
count()
test()
end()

```

Output:

Hello! My name is Sbot.
 I was created in 2021.
 Please, remind me your name.

Conclusion:

We have understood concept of chat bot and implemented an elementary chatbot application for customer interaction.

Oral questions:What is a chatbot?

1. How does the chatbot understand what the customer is trying to convey?
2. How does the bot know when it needs to converse with a human?
3. Can the bot be controlled once it is live?
4. What are the key benefits of chatbots to business applications?
5. What languages and technologies should a chatbot developer be well-versed in to build chatbots?
6. Will chatbots replace mobile apps in the future?
7. What are some of the most popular companies using chatbots?