Assignment No: 5

1. **Title of Assignment:**

   Develop an elementary chatbot for any suitable customer interaction application.

2. **Prerequisite:**

   Basic knowledge of AI and customer interaction etc.

3. **Objective:**

   - To create a chatbot to interact with customers.

4. **Outcome:**

   Successfully able to implement Chatbot for different applications

5. **Software and Hardware Requirement:**

   Open Source C++ Programming tool like G++/GCC, python, java and Ubuntu.

6. **Relevant Theory / Literature Survey:**

What is a chatbot?

A chatbot is a computer program designed to have a conversation with human beings over the internet. It's also known as conversational agents, which communicate and collaborate with human users, through text messaging, in order to accomplish a specific task.

Basically, there are two types of chatbots. The one that uses Artificial Intelligence, and another one is based on multiple choice scripts.

Both types of chatbots aim to create a more personalized content experience for the users, whether that's while watching a video, reading articles or buying new shoes.

These Chatbots hold the promise of being the next generation of technology that people use to interact online with business enterprises. These Chatbots offer a lot of advantages, one of which is that, because Chatbots communicate using a natural language, users don't need to learn yet another new website interface, to get comfortable with the unavoidable quirks.

Chatbots are capable of interpreting human speech, and decide which information is being sought. Artificial intelligence is getting smarter each day, and brands that are integrating Chatbots with the artificial intelligence, can deliver one-to-one individualized experiences to consumers.

Why chatbot?

Chatbots can be useful in many aspects of the customer experience, including providing

customer service, presenting product recommendations and engaging customers through targeted marketing campaigns. If a customer has an issue with a product, she can connect with a chatbot to explain the situation and the chatbot can input that information to provide a recommendation of how to fix the product. On the recommendation side, chatbots can be used

to share popular products with customers that they might find useful and can act as a sort of personal shopper or concierge service to find the perfect gift, meal or night out for a customer with just a few basic questions. Brands are also using chatbots to connect their customers with thought leaders and add personality to their products. In all cases, brands seem to be having great success and experiencing increased engagement and revenue.

Chatbots are easy to use and many customers prefer them over calling a representative on the phone because it tends to be faster and less invasive. They can also save money for companies and are easy to set up.

Chatbots are relatively new and most companies haven't implemented them yet, it's only natural that users are interested in them. Hence, people want to discover what chatbots can and cannot do. The number of businesses using chatbots has grown exponentially. Chatbots have increased from 30,000 in 2016 to over 100,000 today. Every major company has announced their own chatbot and 60% of the youth population uses them daily.

These statistics prove that chatbots are the new-gen tech. No more waiting for the right time to incorporate them into your business. The time is now. By the year 2020, nearly 80% of businesses will have their own chatbot.

Billions of people are already using chatbots, so it's time your business did too.

Benefits of chatbots?

Chatbots are being made to ease the pain that the industries are facing today. The purpose of chatbots is to support and scale business teams in their relations with customers.

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, where in 80% of the time would be in just 5 apps. This means you can hardly shoot ahead with an app, but you till have high chances to integrate your chatbot with one of these platforms.

Types of Chatbots

Chatbots are categorized into two different types.

Rule-based chatbots

Chatbots follow a set of established rules or flows to respond to questions posted by a user. All your simple applications contain rule-based chatbots, which respond to queries based on the rules they are trained on. For instance, a weather application, where you ask for a weather forecast and it fetches the data from different sources and responds with the information.

Rule-based chatbots may not be able to hold complex conversations. It can only accomplish the tasks it is programmed to perform unless more improvements are made by the developer.

Machine Learning-based chatbots

Chatbots that are based on machine learning can hold more complex conversations as they try to process the question and understand the meaning behind the question. It learns from the

previous conversation and enables itself to handle more complex questions in the future.

Now let's go through some of the benefits that chatbots provide:

1.   Available 24*7: I'm sure most of you have experienced listening to the boring music playing while you're kept on hold by a customer care agent. On an average people spend 7 minutes until they are assigned to an agent. Gone are the days of waiting for the next available operative. Bots are replacing live chat and other forms of contact such as emails and phone calls. Since chatbots are basically virtual robots they never get tired and continue to obey your command. They will continueto operate every day throughout the year without requiring to take a break. This improves your customer satisfaction and helps you rank highly in your sector.

2.   Handling Customers: We humans are restricted to the number of things we can do at the same time. A study suggests that humans can only concentrate on 3–4 things at the same time. If it goes beyond that you are bound to meet errors. Chatbots on the other hand 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 instantly. Companies like Taco Bell and Domino's are already using chatbots to arrange delivery of parcels.

3.   Helps you Save Money: If you are a business owner you are bound to have a lot

of employees who need to be paid for the work they do. And these expenses just keep adding up as business grows. Chatbots are a one time investment which helps businesses reduce down on staff required. You could integrate a customer support chatbot in your business to cater to simple queries of customers and pass on only the complex queries to customer support agents.

4.   Provides 100% satisfaction to customers: Humans react to others based on their mood and emotions. If an agent is having a good attitude or is in a good mood he will most probably talk to customers in a good way. In contrast to this the customer will not be satisfied. Whereas chatbots are bound by some rules and obey them as long as they're programmed to. They always treat a customer in the most polite and perfect way no matter how rough the person is. Also, in the travel and hospitality industry where travelers do not speak the same language, a bot can be trained to communicate in the language of the traveler.

5.   Automation of repetitive work: Let's be honest, no one likes doing the same work again and again over a brief period of time. In the case of humans, such tasks are prone to

errors. Chatbots now help automate tasks which are to be done frequently and at the right time. Also, now there are numerous slack bots which automate repetitive tasks. This helps people save time and increase productivity. For example, there are new items bought from your eCommerce site or there is a bug reported then it sends a short summary to a slack channel.

6.   Personal Assistant: People could use Bots as a 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.

To create your own chatbot:

1 Identify your business goals and customer needs.

2   Choose a chatbot builder that you can use on your desired channels.

3   Design your bot conversation flow by using the right nodes.

4 Test your chatbot and collect messages to get more insights.

5 Use data and feedback from customers to train your bot.

How can chatbots drive revenue for you? Below we have compiled reasons why chatbots are important for your business and how can they help in increasing revenues:

a. Higher user customer engagement

Most businesses these days have a web presence. But with being on the internet, boundaries of dayand night, availability and unavailability have changed, so have user expectations. This is probably the biggest reason to use them. Bots give the user an interactive experience. It makes customers feel they are working with someone to help resolve their issue. If done right, bots can help customers find what they are looking for and make them more likely to return.

Customer Engagement

Clearance Sale : Notify users about on-going clearance sale of products relevant to the users at their nearest outlets. Product Finder : Enable consultative selling without the need of a call center It offer Notification : Notify users about offers, product launches on products/ services they've showninterest in, and products that's back in stock

b. Mobile-ready and immediate availability

Along with a web presence, it has also become increasingly important for brands to have a mobile presence - mobile apps, mobile-optimized websites. Considering how chat has been around on the mobile for ages, most chatbot implementations don't need you to work on tweaking their UI, they are ready to implement and so available to your customers immediately.

You might argue that you have an app for that. Having an app for your brand is great, but having users discover that app, download it and use it to stay engaged is not an easy deal. Instead, implementing a chatbot - which works on the mobile browser or a messaging-app which the user regularly uses - makes it all the more reason for a customer to be engaged with the brand

c. It can drive sales

Chatbots can be intelligent. Depending on a user's preferences or purchases, it can send products to customers which are more likely to convert into sales. Or it can send coupons to users for in-store purchases/discounts. Bots can also be used to link the user to your mCommerce site/app so they can buy the product directly from the convenience of their phones. Sell Intelligently

Product Recommendations: Push proactive recommendations to users based on their preferences and search and order history. Enable order booking over chat.

d.   **Minimal cost -** Maximum return the best part about bots is they are cheap.

Chatbot provides the necessary infrastructure and APIs for creating these bots. They require minimal maintenance and since it is automated, there is no labor-intensive work that goes in there.

e.   **Customer Service Track Order:** Keep users up to date with order status. Schedule or reschedule delivery to a provided address or request to pick it up at any other Best Buy outlet. Stock outs: Notify users when desired product is available and place order over a chat. Returns and Replacements: No waiting time to reach customer care. Customers can instantly place a request to replace or return an order. Seek Reviews: Reach out to users to seek reviews on the products recently bought.

Gift Recommendations

● Recommend relevant gifting options to users, accessing calendar events and understanding the likes and style of beneficiary.

    ● Opportunity to upsell gift cards for the users for every occasion.

    ● Application across Industries.

According to a new survey, 80% of businesses want to integrate chatbots in their business model by 2020. So which industries can reap the greatest benefits by implementing consumer-facing chatbots? 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 have introduced their Chatbots to stand out from 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 work to accept table

reservations, take special requests and go 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 can help hotels in a number of areas, including time management, guest services and cost reduction. They can assist guests with elementary questions and requests. Thus, freeing up hotel staff to devote more of their time and attention to time-sensitive, critical, and complicated tasks. They are often more cost effective and faster than their human counterparts.

They can be programmed to speak to guests in different languages, making it easier for the guests to speak in their local language to communicate.

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 favorable chances to serve their customers with personalized 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 into the Finance Industry. Chatbots can be programmed to assists 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 personalized health and fitness tips. Tech based fitness companies can have a huge opportunity by developing their own Chatbots offering a huge customer base with personalized services. Engage with your fans like never before with news, highlights, game-day info, roster and more.

Chatbots and the 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 conversations with millions of fans. Chatbot in Marketing

SMS Marketing

- Why promote just a coupon code that the customer does not know how to use?
- Improve conversions from your existing SMS campaigns.
- Talk to your customers when they want to using "Talk to an Agent" feature.

Email Marketing

- So your eMail has made a solid elevator pitch about your product.
- As a next step, is making customers fill an online form the most exciting way to engage with your customers?
- It's time to rethink the landing page.
- Instantly engage in a conversation with your customers.
- Address their concerns and queries

Social Media Triage

- How effectively are you addressing the negative sentiment around your brand on socialmedia?
- Addressing queries instantly and effectively can convert even an angry customer into a loyalfan.
- Leverage a chatbot as your first response strategy and comfort that customer.

7. Questions:

Q 1: What is the use of a chat bot?

Q 2: Explain dialog flow in detail.

Q 3: What are the requirements for developing a chatbot?

Q 4: How do you evaluate a chatbot performance?

Q 5: How do I improve my chatbot accuracy?

8. Conclusion:

Smart solutions were important for the success of any business. From providing 24/7 customer service, improving current marketing activities, saving time spent on engaging with users to improving internal processes, chatbots could yield the much-needed competitive advantage. If you were looking to develop a chatbot, the best thing to do would be to approach a company that would understand your business needs to develop a chatbot.