Intelligent Customer Help Desk with Smart Document Understanding

1. INTRODUCTION : -

1.1 OVERVIEW: SDU(smart document understanding) trains Watson Discovery to extract custom fields in your documents. Customizing how out documents are indexed into Discovery will improve the answers returned from queries.With SDU, we annotate fields within our documents to train custom conversion models. As we annotate, Watson is learning and will start predicting annotations. SDU models can also be exported and used on other collections.

The typical customer care chat bot can answer simple questions, such as store locations and hours, directions, and perhaps even making appointments. When a question falls outside of the scope of the per-determined question set, the option is typically to tell the customer the question is not valid or offer to speak to a real person.

1.2 PURPOSE: In this project, there will be another option. If the customer question is about the operation of a device, the application shall pass the question onto Watson Discovery Service, which has been per-loaded with the device's owner's manual. So now, instead of "Would you like to speak to a customer representative?" we can return relevant sections of the owner's manual to help solve our customers' problems.
To take it a step further, the project shall use the Smart Document Understanding feature of Watson Discovery to train it on what text in the owner's manual is important and what is not. This will improve the answers returned from the queries.

2. LITERATURE SURVEY:-

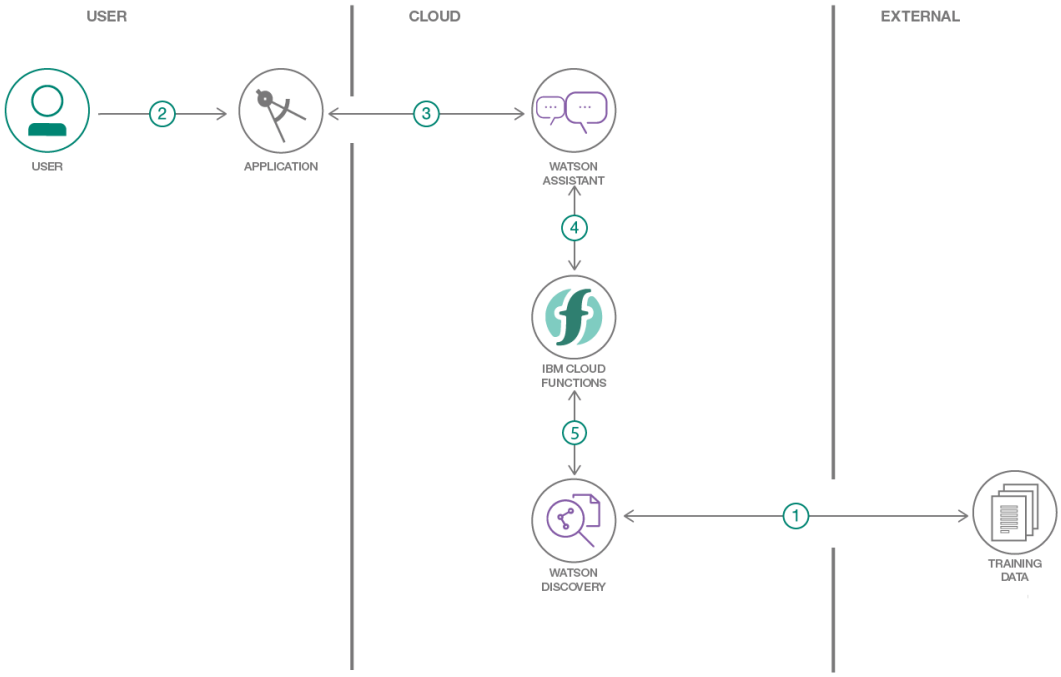
2.1 EXISTING PROBLEM : The typical customer care chat bot can answer simple questions, such as store locations and hours, directions, and perhaps even making appointments. When a question falls outside of the scope of the per-determined question set, the option is typically to tell the customer the question is not valid or offer to speak to a real person.

2.2 PROPOSED SOLUTION :

1. The document is annotated using Watson Discovery SDU
2. The user interacts with the backend server via the app UI. The front end app UI is a chat bot that engages the user in a conversation.
3. Dialog between the user and backend server is coordinated using a Watson Assistant dialog skill.
4. If the user asks a product operation question, a search query is passed to a predefined IBM Cloud Functions action.
5. The Cloud Functions action will query the Watson Discovery service and return the results.

3.THEORITICAL ANALYSIS

3.1 Block diagram



3.2 Technical and Software Requirements

Technical Requirements: -

- Create a customer care dialog skill in Watson Assistant.
- Use Smart Document Understanding to build an enhanced Watson Discovery collection.
- Create an IBM Cloud Functions web action that allows Watson Assistant to post queries to Watson Discovery.
- Build a web application with integration to all these services Andre deploy the same on IBM Cloud Platform.

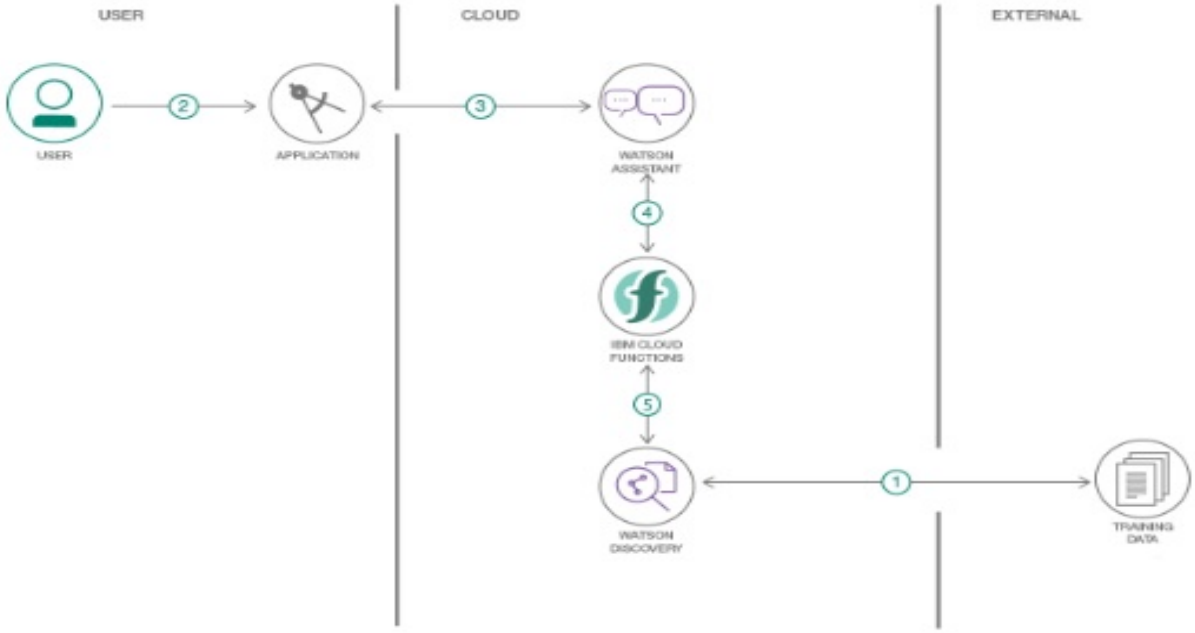
Software Requirements: -

- The chat bot should be able to respond quickly sufficient
- e Watson Discovery should be able to handle traffic efficiently.
- The data should not get mixed up or there should be no data loss.
- The Watson Discovery should be trained efficiently with the help of Smart Document Understanding.
- IBM cloud functions should enable Watson Assistant to post queries to Watson Discovery.

4 EXPERIMENTAL INVESTIGATIONS

- Create a customer care dialog skill in Watson Assistant
- Use Smart Document Understanding to build an enhanced Watson Discovery collection
- Create an IBM Cloud Functions web action that allows Watson Assistant to post queries to Watson Discovery
- Build a web application with integration to all these services & deploy the same on IBM Cloud Platform.

5. FLOWCHART


USER
CLOUD
EXTERNAL
USER
APPLICATION
WATSON ASSISTANT
IBM CLOUD FUNCTIONS
WATSON DISCOVERY
TRAINING DATA
1
2
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4
5

6. RESULT

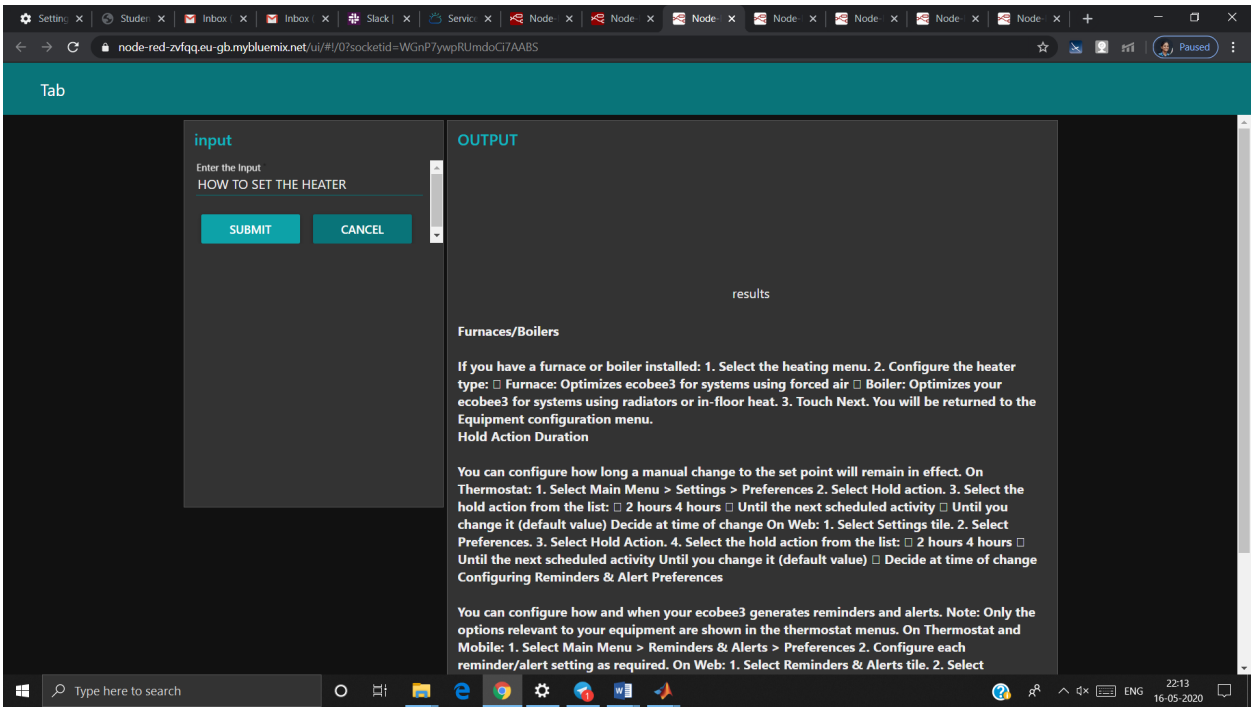


FIGURE 1: DISPLAYS THE RESULT OF " HOW TO TURN ON THE HEATER"

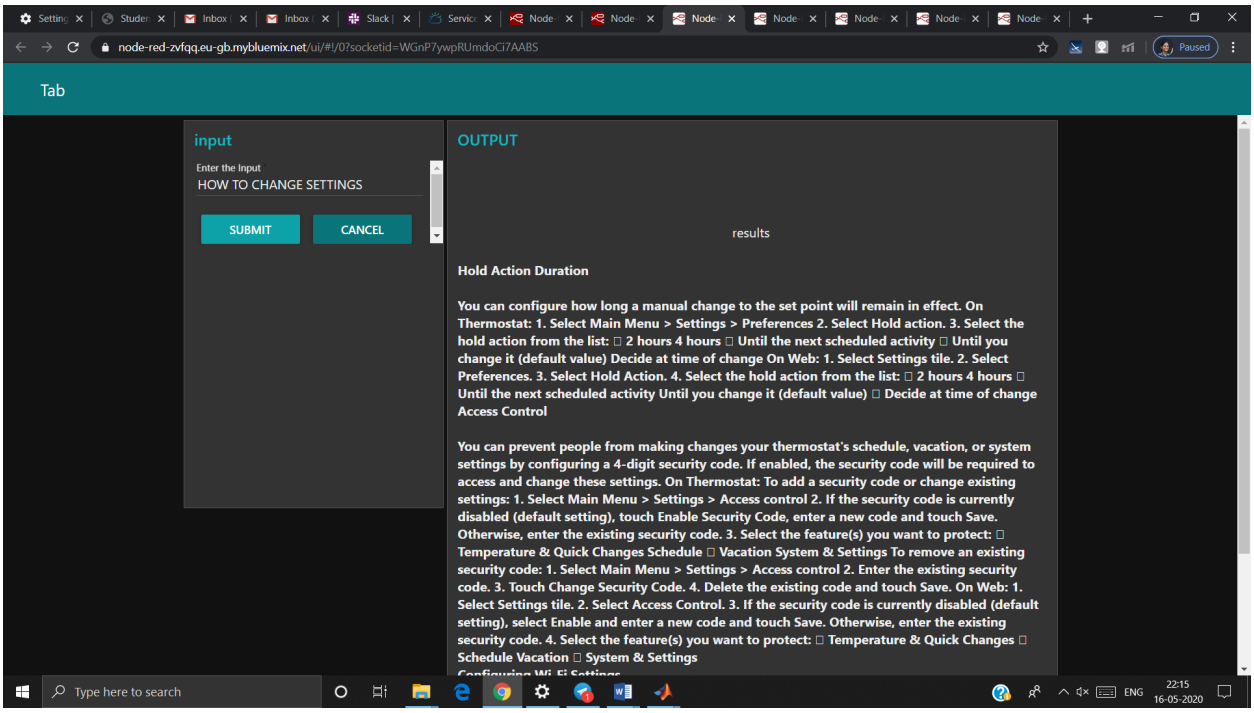


FIGURE 2: DISPLAYS RESULTS OF "HOW TO CHANGETHE SETTINGS"

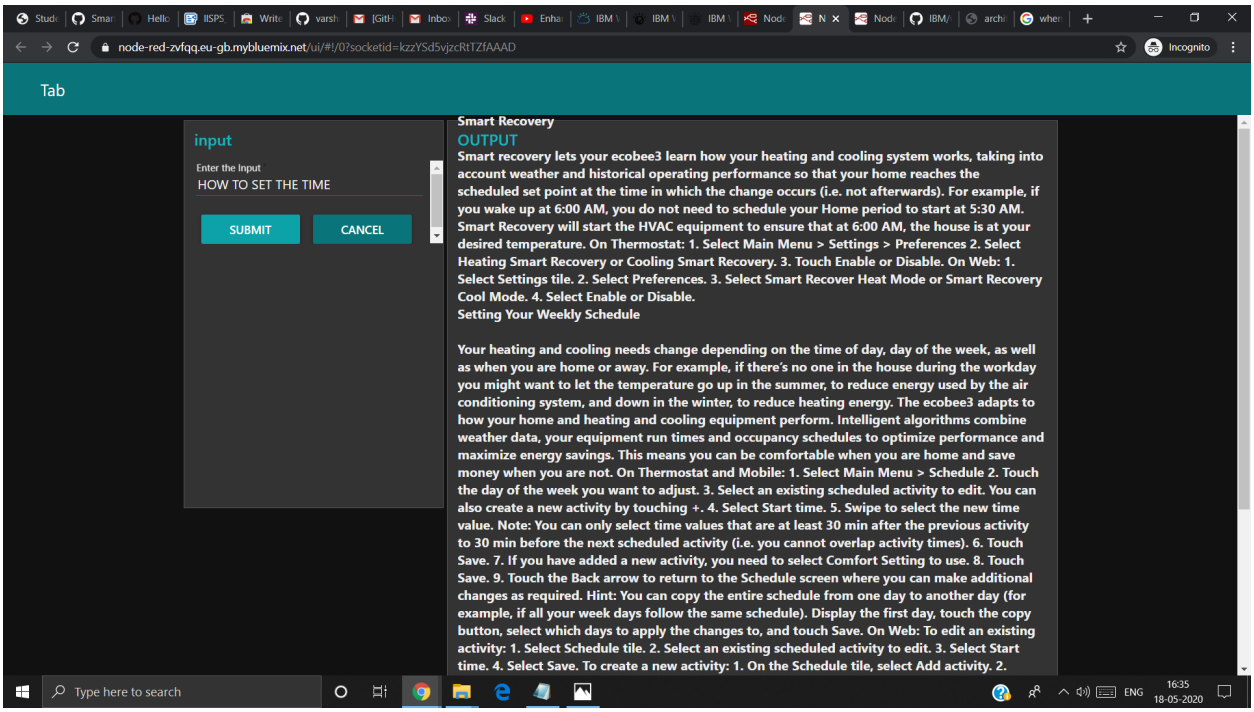


FIGURE 3: ON " HOW TO CHANGE THE TIME"

7.ADVANTAGES AND DISADVANTAGES

7.1 ADVANTAGES

*** Faster Customer Service**

One advantage of using bots is that they help you provide faster customer service. If you have a business, they can provide customer service on your website 24 hours a day. What's more, they don't need weekends, holidays, vacations, or sick days off.

When online customers have questions, all they have to do is ask the bot on your website. There's no waiting on a human to look it up because the answers are a few keystrokes away.

*** Increased Customer Satisfaction**

Another of the pros is that your customers will be more satisfied. When they get satisfactory answers and speedy service, they'll be happier, shop more, and return again.

*** Lower Labor Costs**

Using chatbots gives you an advantage when you are trying to keep costs down. Since we don't have to pay for employee benefits, they may cost less than you'd pay an employee.

Of course, lower labor costs translate into increased profits for your business. In the end, that means more money in your pocket.

*** Variety of Uses**

It's possible to use chatbots in more than one area in a business. we could use them for customer orders, customer service, and advertising just to name a few.

7.2 DISADVANTAGES

***Limited Responses for Customers**

Although using chatbots may provide faster customer service overall, they aren't perfect. Simple ones may have only limited responses for customers. Therefore, not all customers will get the answers they are searching for.

***Customers Could Become Frustrated**

Because many chatbots work from a limited data base, they can't improvise. In other words, if they get confused, the conversation could run in a circle. That can lead to customers who become frustrated.

Slang and sarcasm are lost on a chat bot. Customers who use may not get the results they were hoping for and needing.

***Complex Chatbots Could Cost More**

Complex chatbots that solve some of the problems described above can cost more than simple ones. In some cases, these artificial intelligence chatbots cost thousands more. That defeats part of the purpose of a chat bot, which is to save money.

Setting up AI is expensive due to the hours of work and testing involved. Sure, they can learn, but it still takes time.

***Not All Business Can Use Chatbots**

A Con is that not all business can use them. Some businesses are far too complex for chatbots to be practical.

Trying to program all of the different questions or possible scenarios in such a circumstance would be costly. Additionally, the hours it would take would make such an undertaking unfeasible.

8.APPLICATIONS

According to a report by IBM, businesses spend $1.3 trillion on 265 billion customer service calls each year.

With chatbots, businesses can cut such whopping expenses spent on traditional customer service and speed up the response times to free up agents for more challenging work. Integration of chatbots with social media platforms like Facebook Messenger, LINE, WeChat, and WhatsApp make it easier for businesses to provide 24*7 customer service to the client.

Within the global chat bot market, approximately 45% of end users prefer chatbots as the primary mode of communication for customer service inquiries.

Here are three practical applications of chatbots that positively impact customer service.

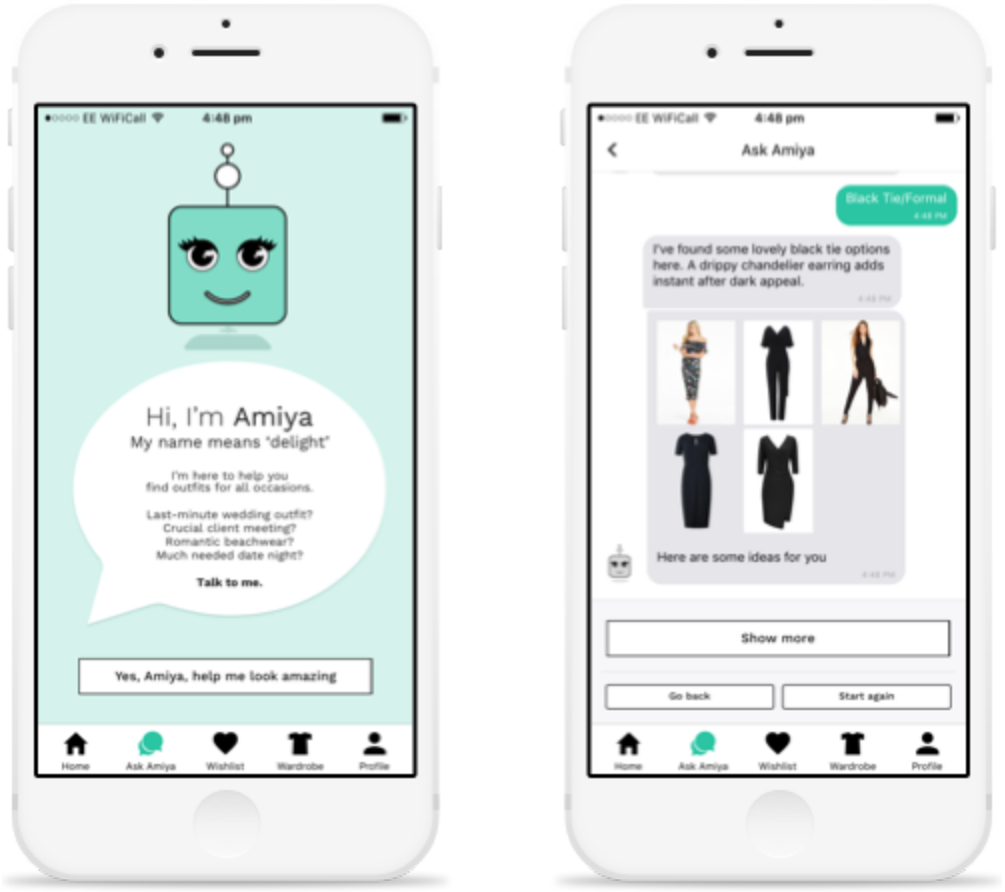
Fashion Assistant

Chatbots in customer service can act as a personal fashion stylist. Price comparison allows customers to browse through different products. By chatting with a company's customer service chat bot in real time, the buying process can become simpler for online shoppers.

Chatbots also recommend products and this makes the entire customer experience more enjoyable and stress-free. Chatbot-based customer support is twice as fast as voice-based support over the telephone and this quickens the entire shopping process.

Dressipi works with world's leading fashion retailers in the UK and helps customers find the perfect clothing with the responses being completely personalized for the shopper, based on their style preferences.

The chat bot (called 'Amiya') smoothens the shopping journey for the customers and creates a stress-free environment for the retailers. Fashion chatbots provide customers with their personalized product, outfit and also gives size recommendations, in real time.



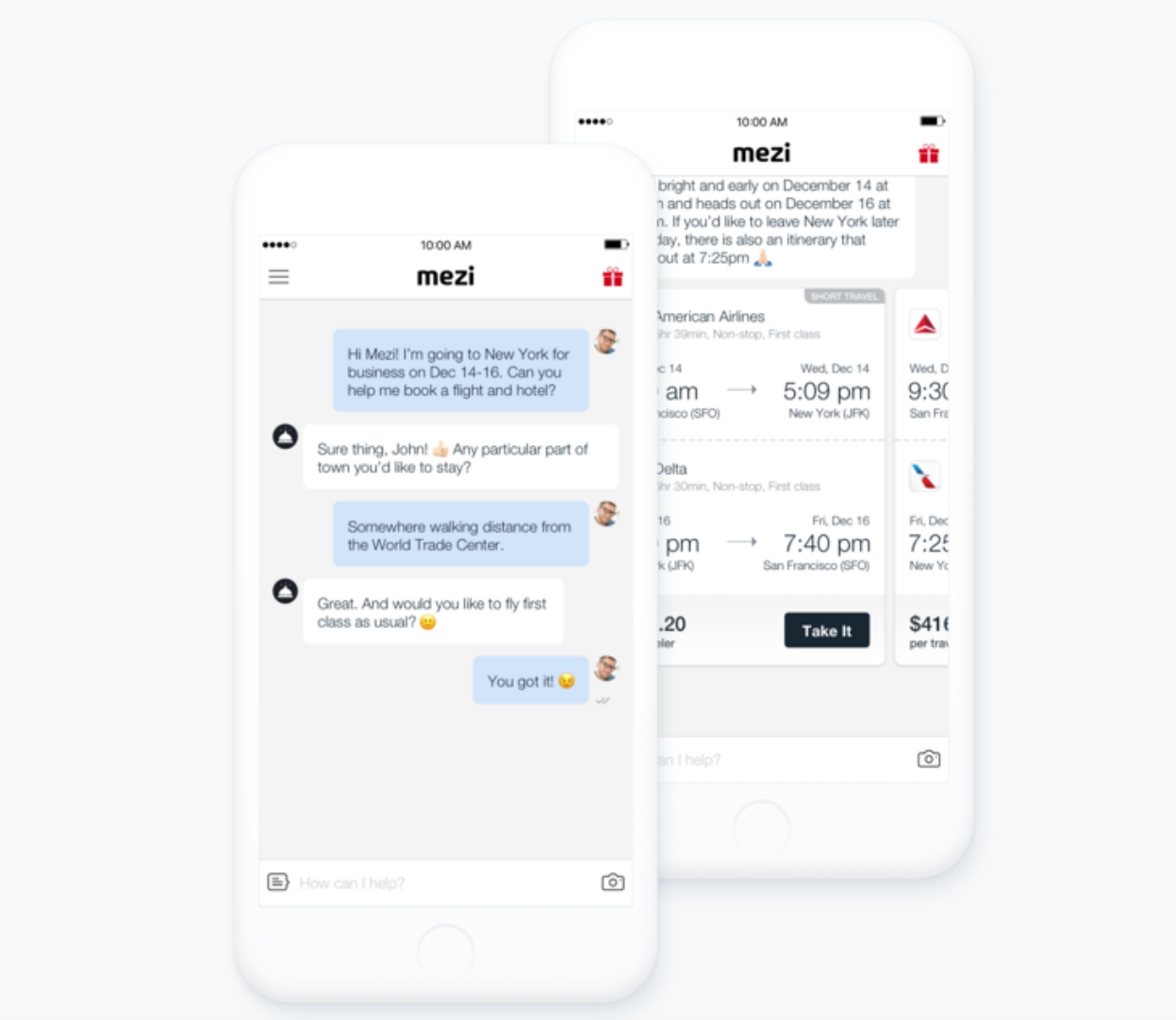
Smart Trip Assistant

For the travel industry, such customer service chatbots could prove to be a boon. Besides the benefit of booking and scheduling flights, chatbots can help integrate additional services via social media platforms.

Passenger experience can be free of stress if chatbots are employed during the journey. For travelers, this would mean that they do not need to worry about small issues like where to change money, where to hail a cab, wait time in the security check line at airports. The only requirement for this automated travel would be a messaging app downloaded on a smartphone. Such services can also extend to hotels, restaurants and even hospitals.

With open APIs, vertical platforms can be created, linking additional services like Airbnb, Uber, and Lyft. In this way, travel companies can expand their footprints and gain a wider customer base by simply deploying chatbots across different checkpoints. American Express and Dutch airline KLM are early adopters of

Messenger chatbots for customer service. American Express acquired Mezi so that the chat bot can make travel recommendations and arrangements at the customers' request.



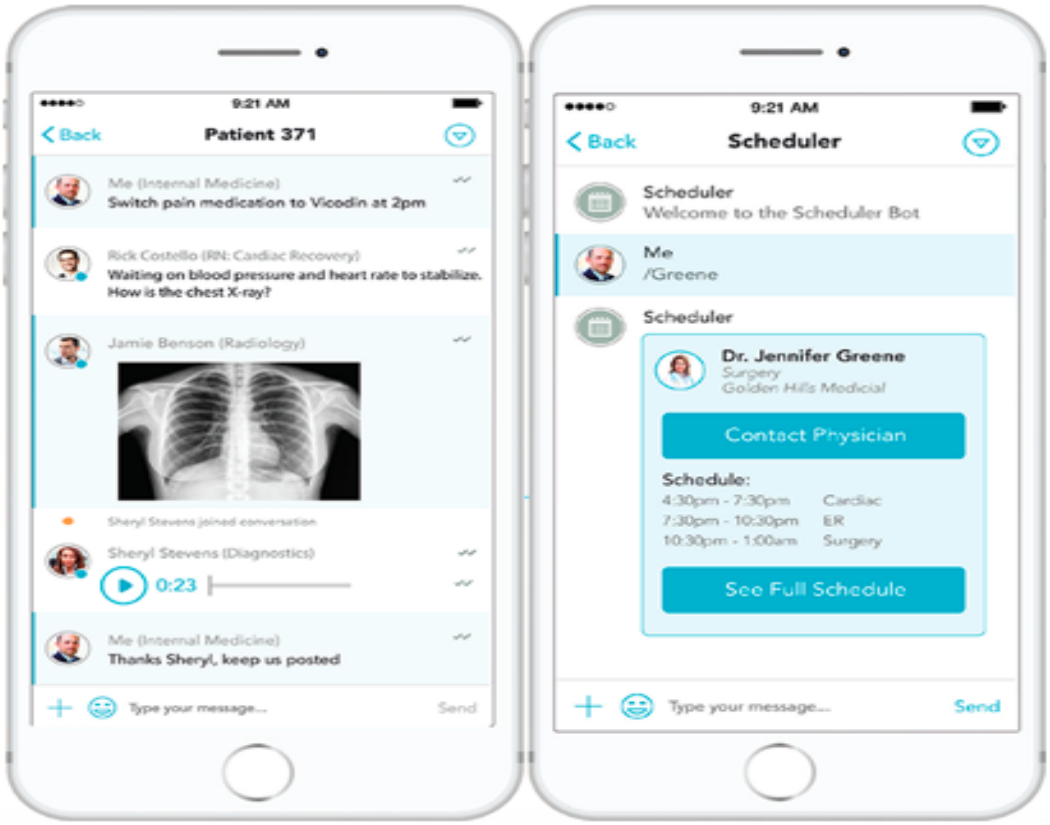
Healthcare Assistant

One of the most useful applications of a chat bot is in the healthcare department. An average patient spends 30 minutes trying to get to the right service in a local hospital. But deploying conversational chatbots in the healthcare sector can significantly reduce long waits and free up times for, patients, nurses, and doctors.

From registration to coverage and claims to compliance, chatbots are in popular demand in healthcare services.

An example of efficient services is that which is provided by Avaamo. Avaamo is a conversational AI chat bot in action and is created to innovate healthcare.

By employing such chatbots in the healthcare industry, there could be a massive saving of time and money. On an average, chatbots could save over four minutes per inquiry, equating to average cost savings in the range of $0.50-$0.70 per interaction.



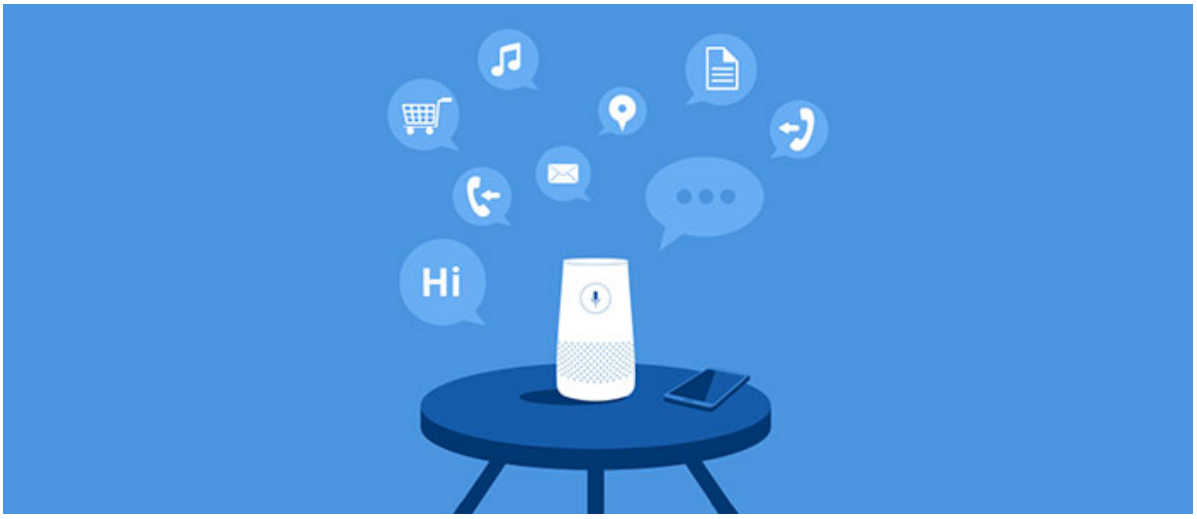
9.CONCLUSION

Chatbots are quickly making transformation changes and allowing businesses to thrive through customer interactions. The feedback and survey through chatbots strengthen the position of businesses as they analyze the reason behind different levels of customer approval. Use of conversational AI chatbots only means better engagement and relentless need for customer satisfaction in the near future.

10. FUTURE SCOPE

Voice bots are becoming mainstream

Voice recognition technology continues to improve in accuracy, and advanced services are getting added to it.
The best example to explain better is Google Allo, an intelligent messaging app packed with Google Assistant that interacts with the user by texting back and replying to queries. This app supports both voice and text queries.



11 .BIBILOGRAPHY

NODE- RED LINK :
https://node-red-zvfqq.eu-gb.mybluemix.net/ui

GitHub link:
https://github.com/varshithamanasa/SmartInternship_SDU