Project Scope Document

TOPIC: Intelligent Customer Help Desk with Smart Document Understanding

1.INTRODUCTION

1.1 Overview

The typical customer care chatbot can answer simple questions, such as store locations and hours, directions, and maybe even making appointments.

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 pre-loaded with the device's owners manual. 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 owners manual is important and what is not. This will improve the answers returned from the queries.

1.2 Purpose

To create a Customer Help Desk using IBM assistant along with the Smart Document Understanding feature provided by IBM Discovery Service

2.LITERATURE SURVEY

2.1 Existing Problem

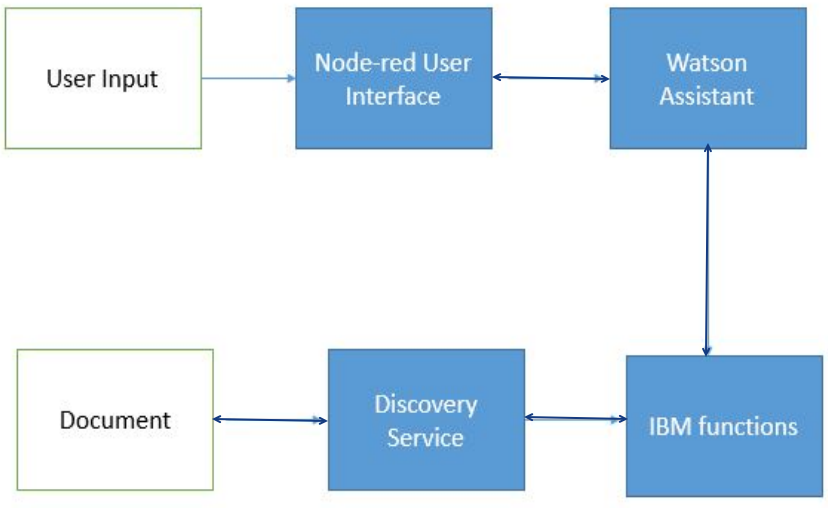
Nowadays it is the era of intelligent machine. With the advancement of artificial intelligent, machine learning and deep learning, machines have started to impersonate as human. Conversational software agents activated by natural language processing is known as chatbot, are an excellent example of such machine.Customer satisfaction with a company's services is often seen as the key to success and long-term competitiveness for a company.The traditional chatbot's dialogue capability is too inflexible. It can answer to the user only if there is a pattern (lexical) matching between the user query and set of question-answer stored in its knowledge base . The answers are given using a set of predefined responses. Traditional chatbots are lacking in the intuitive capability of human beings to see the meaning, relationships and possibilities beyond the reach of sense.

2.2 Proposed Solution

In this project ,we make use of IBM services like IBM Assistant ,Discovery and Cloud Functions. Using Assistant ,we build a dialog skill for customer care .The Watson Discovery service provides developers with the ability to rapidly add a cognitive, search and a content analytics engine to applications in order to identify patterns, anomalies, trends, and insights that drive better decision making. The Watson Discovery service provides a pipeline for ingesting, enriching and storing vast amounts of unstructured data. Watson Discovery service allows you to run queries by using its query API. In addition, Watson Discovery service includes a new feature that provides the ability to improve search results by training using documents with prior relevancy labels (relevancy ranking). These documents can be from your past customer interactions, chat logs, and forum responses. The relevancy ranking feature enables custom training based on ranking provided as part of the ground truth. Both this services are integrated using IBM functions using webhooks.

3.THEORITICAL ANALYSIS

3.1 Block Diagram



3.2 Software Designing

1. The document is annotated using Watson Discovery SDU
2. The user interacts with the backend server via the app UI. The frontend app UI is a chatbot 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.
6. Integrate all services in Node-RED and create a UI for the same.

4.EXPERIMENTAL INVESTIGATIONS

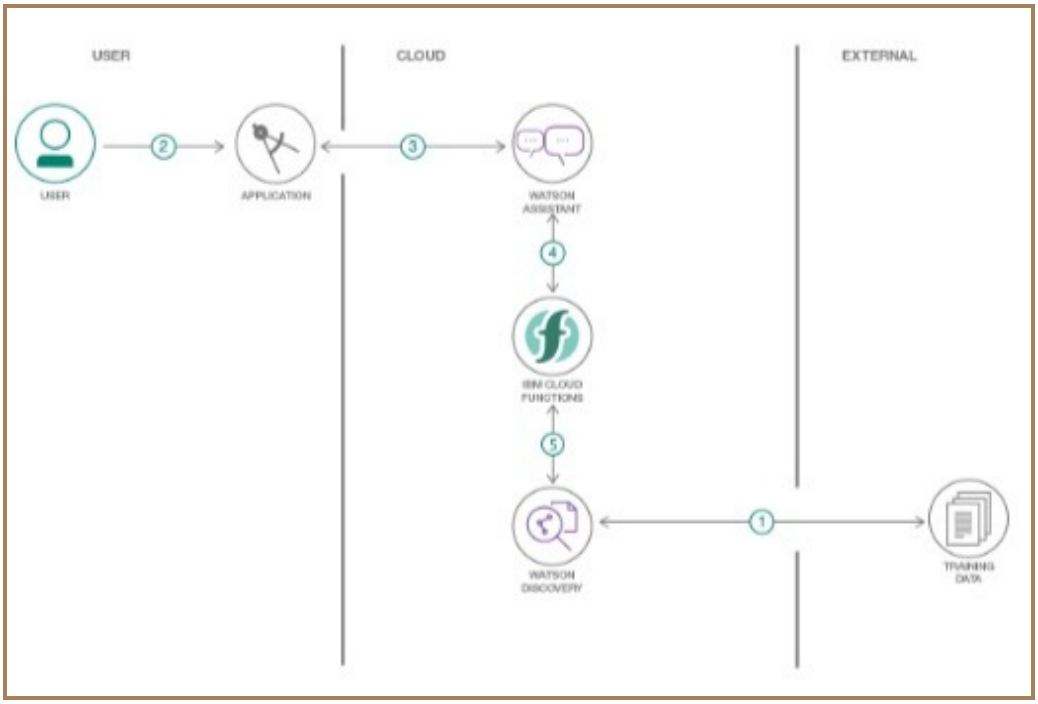
SDU trains Watson Discovery to extract custom fields in your documents. Customizing how your documents are indexed into Discovery will improve the answers returned from queries.

With SDU, you annotate fields within your documents to train custom conversion models. As you annotate, Watson is learning and will start predicting annotations

When used in a Watson Assistant dialog skill, a webhook is triggered when the Assistant processes a node that has a webhook enabled. The webhook collects data that you specify or that you collect from the user during the conversation and save in context variables, and sends the data to the Webhook request URL as an HTTP POST request. The URL that receives the webhook is the listener. It performs a predefined action using the information that is provided by the webhook as specified in the webhook definition, and can optionally return a response.

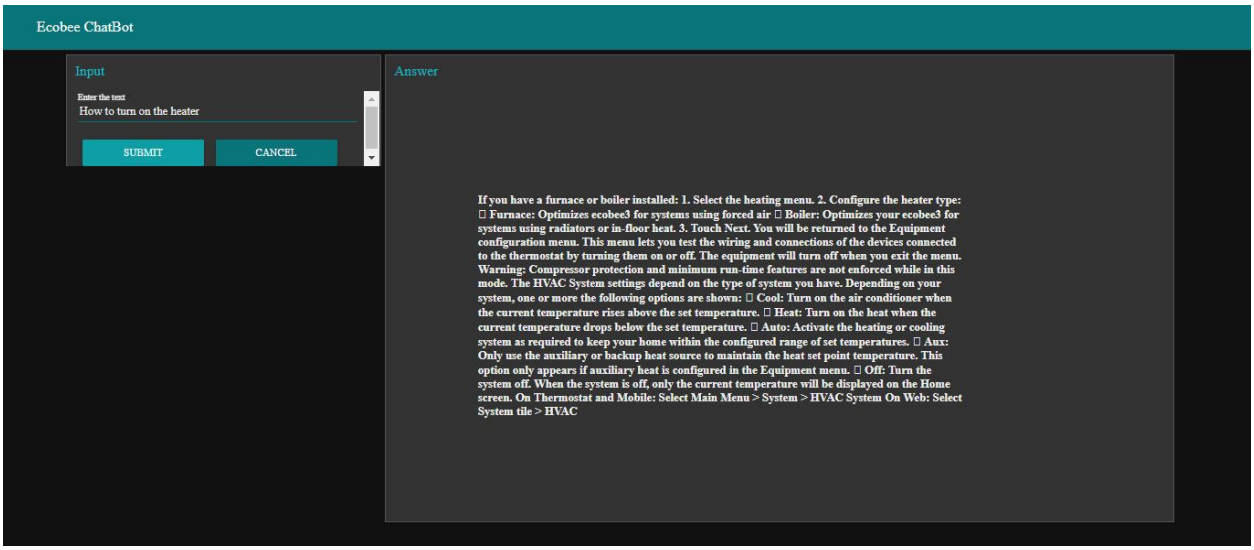
The webhook will communicate with an IBM Cloud Functions web action, which is connected to the Watson Discovery service.

5.FLOWCHART



6.RESULT

The front end UI is created using NODE-RED,where we integate the services.The bot is capable of ansering to the questions related to the added document in Watson discovery as well according to the dialog skill.
The scrrenshot of the output is given below:



7.ADVANDAGES AND DISADVANDAGES

Advandages

- Improve the answers returned from the queries.

Disadvandages

- Predefined or Closed-domain: Most of them are able to answer questions only on closed-domain or based on predefined in the database.
- Ambiguity: The context and meaning of the sentences are unclear or not appropriate meaning with the word.

8.CONCLUSION

The combination of a new wave of thinking and newly developed artificial intelligence technology has the potential to completely change the customer experience to provide great service in a way that resonates with modern customers. This study presents sequential attention in IBM clous services, an architecture for the development of AI chatbot system with self-learning capabilities. The main aim is to fill in a gap in this research area and providing a flexible chat interface for question answering.

9.**FUTURE SCOPE**

Watson is rule-based AI chatbot developed by IBM. It is designed for information retrieval and question-answering system that incorporates natural language processing and hierarchical machine-learning method. Watson uses a broad range of mechanisms to identify and assign feature values such as names, dates, geographic locations or other entities to generated response. The machine learning system then learns how to combine the values of these features into a final score for each response. Based on that score, it ranks all possible answers and selects one as its top answer. Because it can process text mining and complex analytics on huge volumes of unstructured data and handle enormous quantities of data. As the application gains experience with more input, it can find enough patterns to make accurate predictions. Besides the advantages of Watson, it has some major drawback such as it does not process structure data directly, no relational databases, higher maintenance cost, targeting towards bigger organizations and take longer time and effort to teach Watson in order to use its full potential.

10.BIBLIOGRAPHY

1.https://github.com/IBM/watson-discovery-sdu-with-assistant
2.www.ibm.com/watson