Tushar Sharma
ts.sharma0078@gmail.com
Intern, SMARTINTERNZ [Smart Bridge]

Intelligent Customer Helpdesk

with Smart Document Understanding - SB21618
5th May 2020 - 5th June 2020

Table of Content

Introduction

Overview

Intelligent Customer Help Desk With Smart Document Understanding is an application that is fulfilled with SDU [Smart Doc. Understanding] feature. This feature is an ability to understand relevant information of documents and learn from annotation or past experiences that processed through Watson Discovery an IBM Cloud Service. In the end, it forms as a bot / virtual assistant that helps into customer services by its trained knowledge that has driven from different learning paths (Watson Assistant, Cloud Functions).

Project Requirements

IBM Cloud Services, Watson Discovery, Watson Assistant

Functional Requirements

IBM Cloud

Technical Requirements

Python3, Node.js 10, HTML, Cloud Functions

Software Requirements:

Watson Assistant, Watson discovery, Cloud Function

Project Deliverables:

Smartinternz Internship [Smart Bridge]

Project Team:

Tushar Sharma

Project Duration:

30 days

Purpose

Bots are a new technological approach that frames a new conversational world. The newest invention connects a world like well-connected threads. Here Bots has a lot to contribute because it's conversational behavior that helps every service provider. Service is the most important part of service-based firms. Infect, In populous countries, service is the biggest issue because service needs some basic necessities and resources as well as people and time.

Bots can help as a better service-man or virtual assistant that helps the number of customers who can't connect to firms due to lack of communication between company and customer. So, Bots are very intelligent and best learners to understand or gather the relevant information on the specific scenarios. For eg: Giving Appointments, Office locations, or Provide info of Product.

Literature Survey

Existing Problem

Bots are of course a very good technological approach. But, it has also some problem and their basic operations that are not fit for effective customer services. Bots do all basic operations like Greetings, wishes, and appointments, all things are there but it's not complete because it's important to cover the maximum problem of customers and resolve them with it's learning experience.

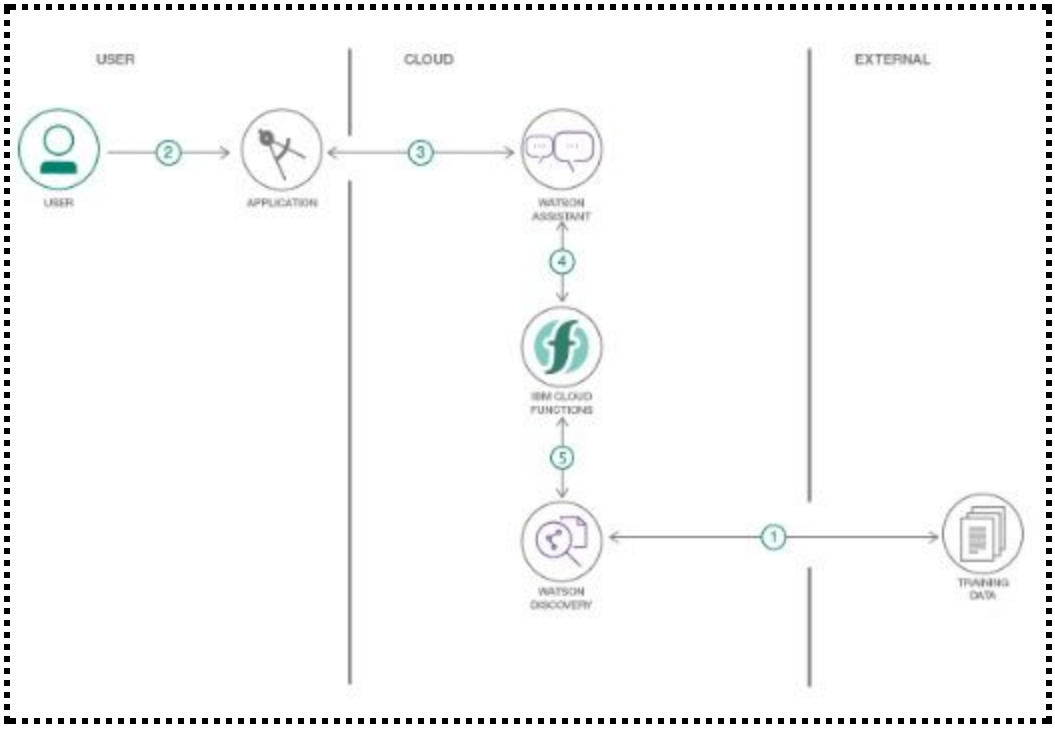
Proposed Solution

To make the bots up to the merits of customer service, we have to add more features by bots learning grows up and they learn from its experiences. This is possible through IBM Watson Services. Watson Service is of many types in that Discovery is service that helps to learn and provide a smart understanding to target systems like bots.

IBM Watson Discovery process structured, semi-structured and unstructured data to do Watson training on targeted documents. Natural Language Processing makes this happens with different supported formats by Watson Discovery. To improve the trained model we have to do some more efforts like annotate the document with some useful levels.

Theoretical Analysis

Flow Chart



Software Designing

Set-up IBM services

- Node-RED
- Watson Assistant
- Watson Discovery

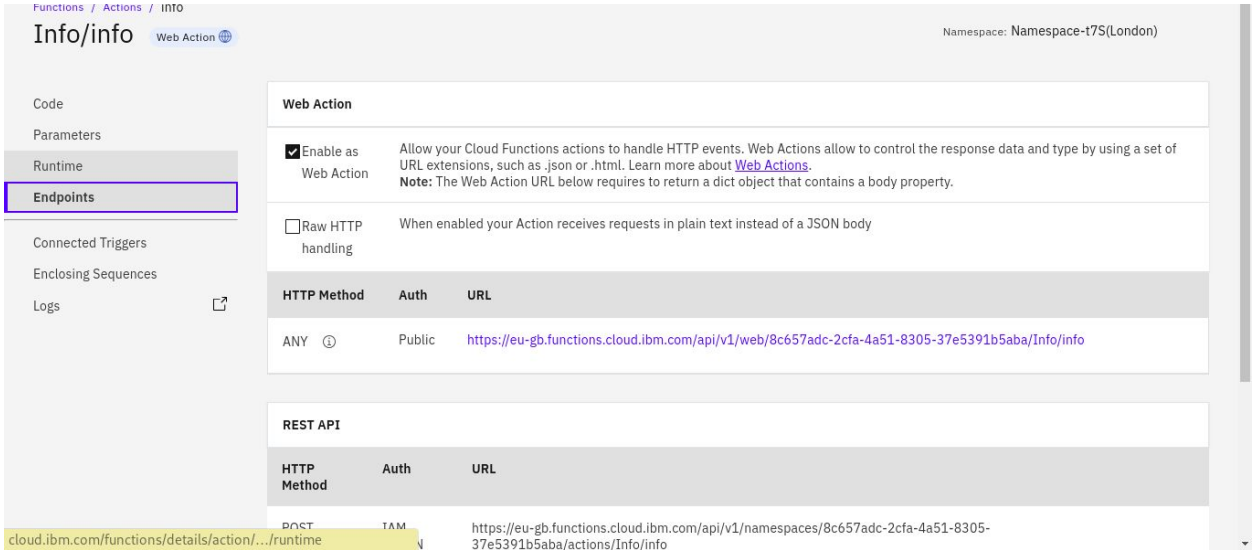
Configure Discovery

- Register for IBM Cloud Services and Launch Watson Discovery. Make your own Data Repository by upload the “ecobee3_UserGuide.pdf” document. This document used in this application and use any type of document that supports by Watson Discovery.

- After Document Upload we got the dashboard as only ‘ 1 ’ Document. To train the Watson very accurately, we do annotation by the specific label which is already given in the options like header, footer, subtitle, etc. After annotating the whole document we upload again that file to update the document.
- Then we try to search for queries and get the result on the basis of Watson’s learning. But to improve Watson’s learning we pass custom queries and train according to those questions that can be generally asked by the user.
- Then we got a particular document id’s which placed in the Watson directory with Environment ID and Collection ID that use to access this train Watson model.

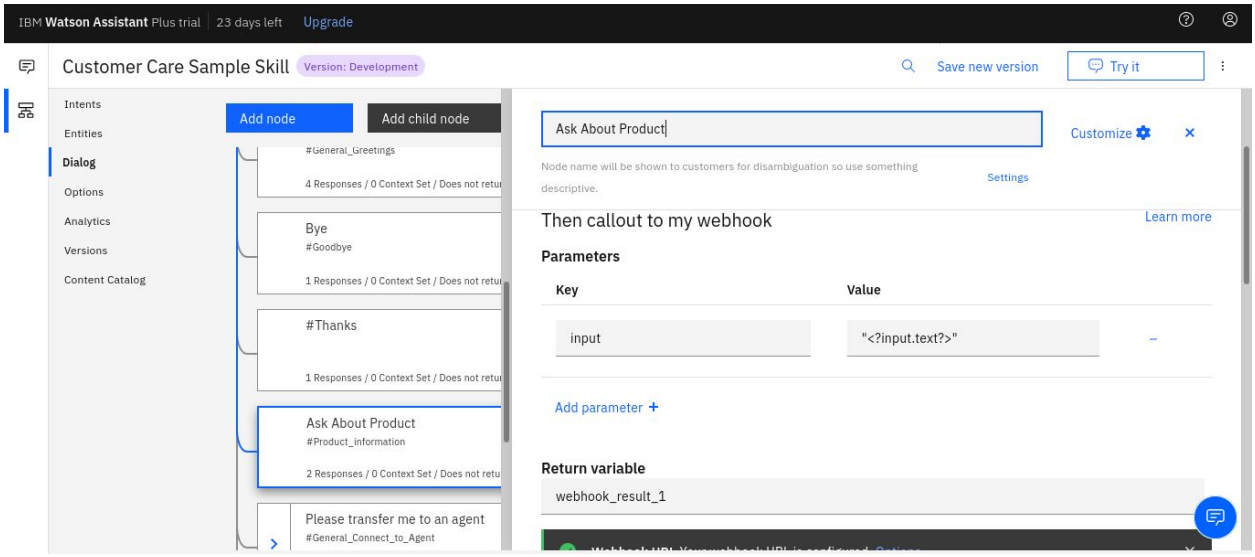
Set-up Cloud function

- Web Action id requires the working of bot or to access the discovery query so, we use Cloud function.
- After Set-up Cloud Function we got code panel and we do some code {link in Appendix} in JS 10. Then we explore the options like parameters to provide values for URL, environment_id, collection_id, iam_apikey, etc.
- Below the Parameters, another option ENDPOINTS there, we should enable Web Action

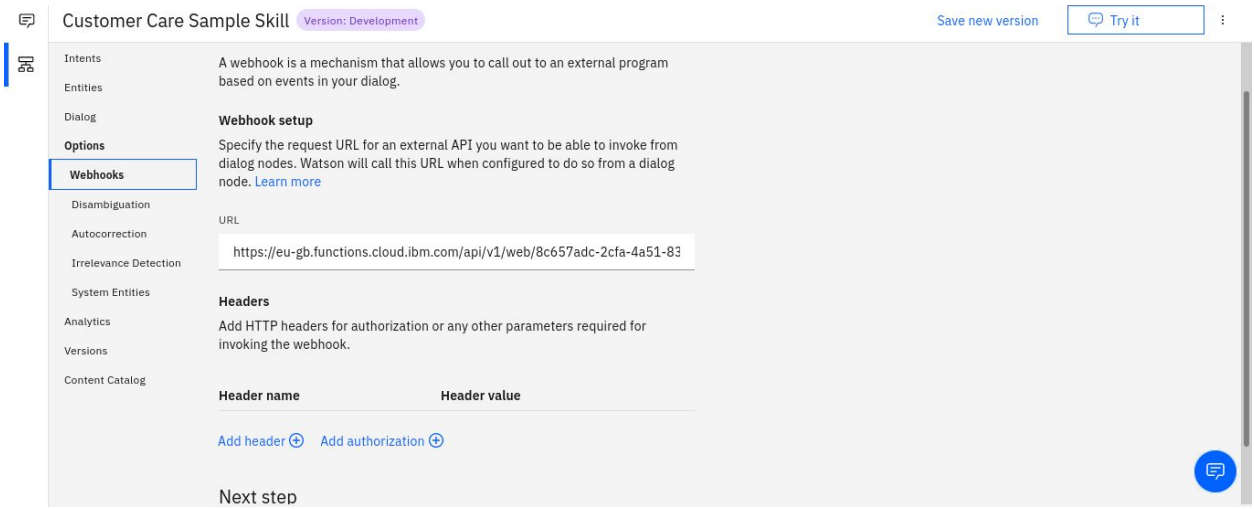


Watson Assistant

- Now, create a Watson assistant to create a chatbot. Then launch it, Got a dashboard to create a chatbot.
- To make a chatbot, we have to first require dialog and intents that helps bots to understand user need. So, we can import the dialogs in JSON format.
- For example, we take Customer Skill Dialogs and go for Dialog options then we saw many existing nodes.
- Prepare a new node “Ask About Production” that purposely made only for product-based queries.



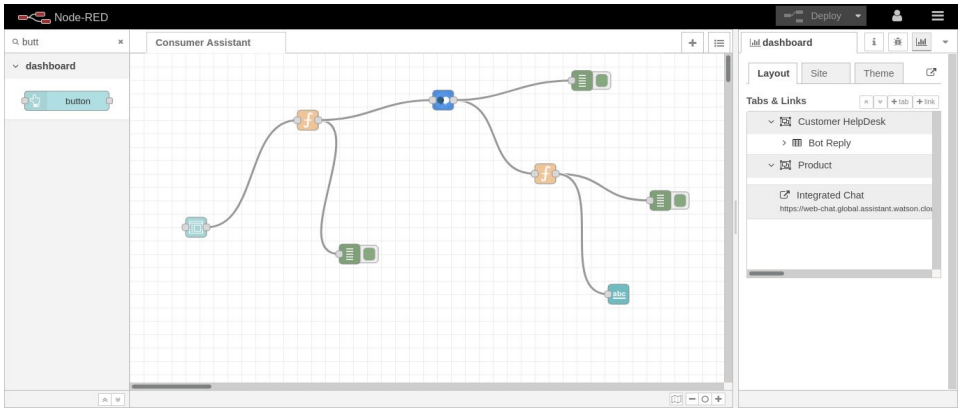
- Now, in that node, we set RESPONSE for the fetched answer of Product Queries. To make it happen we must on the webhook that is an option named “WEBHOOK” and in a blank box we put the URL of -- > cloud function >> Endpoints >> URL with JSON extension.



- The dialog node should have a Return variable set automatically to $webhook_result_1. This is the variable name that is used to access the result from the Discovery service query.

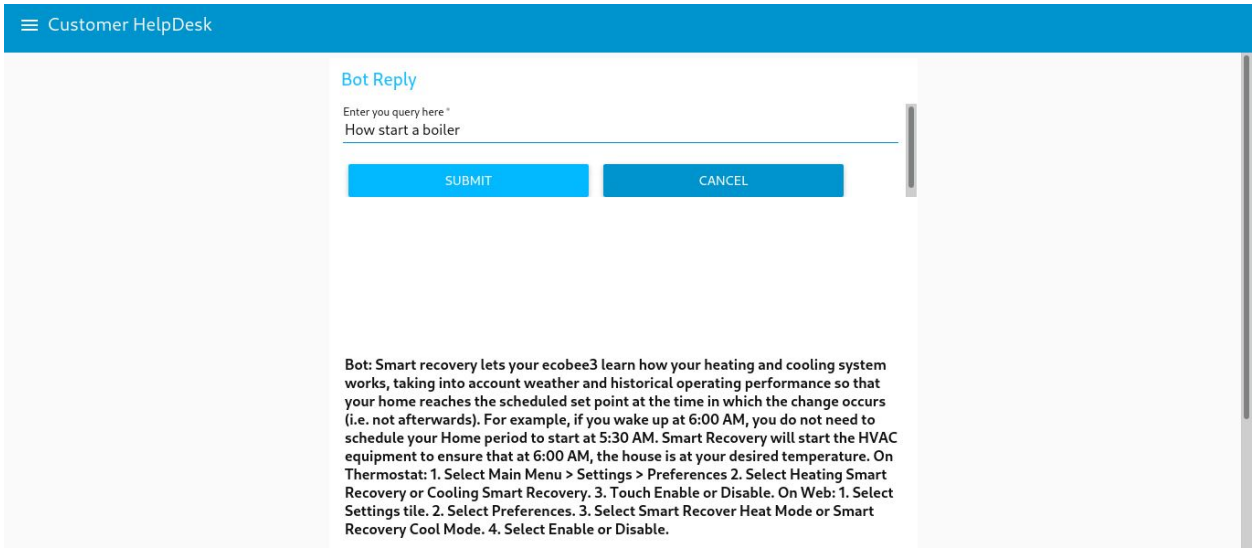
Node-RED Config

- We deploy some nodes to make the interface for the bot.
- First, we install the Dashboard from Manage Plates to get some new nodes that use for this process.
- Deploy NODE RED Application.



RESULT

An Expected application is prepared for Customer Services.



Advantages and Disadvantages

Advantages

- AI-based chatbots can learn from their experience.
- It can handle multiple customers at the same time that helps firms to control their clients and customers.
- It reduces the human need so, the company cost decreases.
- The best advantage is that Chatbots available 24/7.

Disadvantages

- Chatbots can’t have previous memory with clients.
- Sometimes it’s complex for many users.

Application

- Virtual Assistance: It performs the tasks on the command of the user.
- Customer Services: It helps to given general info to customers and also connects with human advisory.
- Legal: In the Legal Industry chatbots are very helpful to give law advice.

Conclusion

A chatbot is need of this time because of time demand. This world has most of the things that are popular for their tech novelty and the consequences of the adventure in the markets. Where half of the world wants to connect with new technologies and have a very void background or they don't have any prior knowledge. So, to address many people for their solution without need any human workforce chatbot is perfectly fit for there situations. So, This type of application can benefits society and business firms also.

Future Scope

The Internet of things is the world's new tech attraction. Bots & Application can be a great combination in the tech industry because of internet connectivity with things and chat's conversational features. Human is very addressable with this conversational feature. Voice Recognization is very featuring for today's world cause of an easy way to create a connection between humans and machines.

Bibliography and Links

- https://nodesmart.eu-gb.mybluemix.net/ui/#!/1?socketid=2YF965TQyR2Z7TcmAAAL
- https://cloud.ibm.com/devops/toolchains/c5b023f1-7401-457c-9770-df20591cdc97?env_id=ibm:yp:eu-gb
- https://web-chat.global.assistant.watson.cloud.ibm.com/preview.html?region=eu-gb&integrationID=6de3a07d-623b-488a-8d19-2275562b4260&serviceInstanceID=8698c9f9-b109-486a-9c50-6233f378e4b7 [Assitant]
-