PROJECT REPORT

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Project - Intelligent Customer Help Desk with Smart Document Understanding.
Domain- Artificial Intelligence / Machine Learning

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1) INTRODUCTION :

1.1 Overview :

Our main aim is to build a chat bot that uses various Watson AI Services to deliver a Web based UI through which we can chat with the assistant . We then integrate the Watson Discovery and Watson Assistant using Webhooks.

Project Requirements : IBM Watson,Node-Red,IBM Cloud,Node JS

Functional Requirements : IBM Cloud

Technical Requirements : AI,ML,Watson AI,Node JS

Software Rquirements : Watson Assistant,Watson Discovery,Watson Cloud Functions,Node-RED.

Project Deliverables : Intelligent Chat Bot with Smart Document Understanding.

Project Duration : 1 month

1.2 Purpose :

The simple customer care chatbot answers simple questions, such as store locations,hours and directions.When the user asks a question out of the usual set of questions the chatbot gives us an output as invalid or an option of talking to the representative.

Whereas in this project if the customer question is about the device, even then our chatbot can give us a relevant reply.
The question is passed onto Watson Discovery Service pre-loaded with device's owners manual. So now, we can return relevant sections of the owners 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 owners 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 chatbot can answer simple questions, such as store locations and hours, directions, and maybe even making appointments. When a question falls outside of the scope of the pre-determined question set, the option is typically to tell the customer the question isn't valid or offer to speak to a real person.

2.2 Proposed Solution :

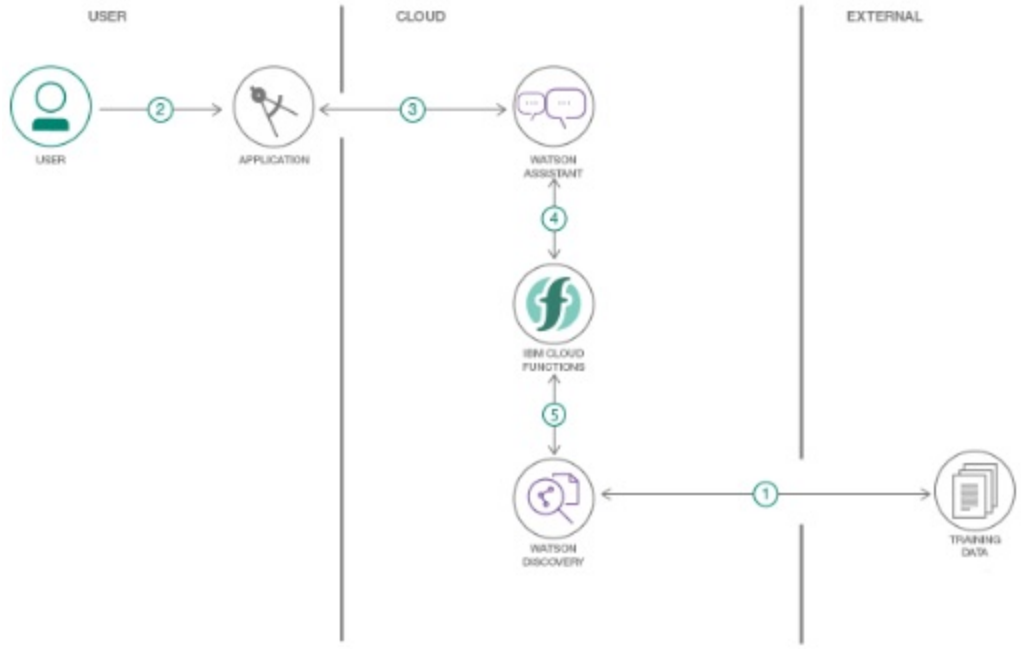
In this project if the customer question is about the device, even then our chatbot can give us a relevant reply.

The question is passed onto Watson Discovery Service pre-loaded with device's owners manual. So now, we can return relevant sections of the owners 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 owners manual is important and what is not. This will improve the answers returned from the queries.

3) THEORITICAL ANALYSIS :

3.1. Block Diagram :



3.2. Proposed Solution :

Create IBM Cloud Services.
Configure Watson Discovery.
Create IBM Cloud Function Action

Configure Watson Assitant
Create flow and configure node
Deploy and run node red app

4) EXPERIMENTAL INVESTIGATIONS :

1) Create IBM Cloud Services :
Watson Discovery
Watson Assistant
Node Red

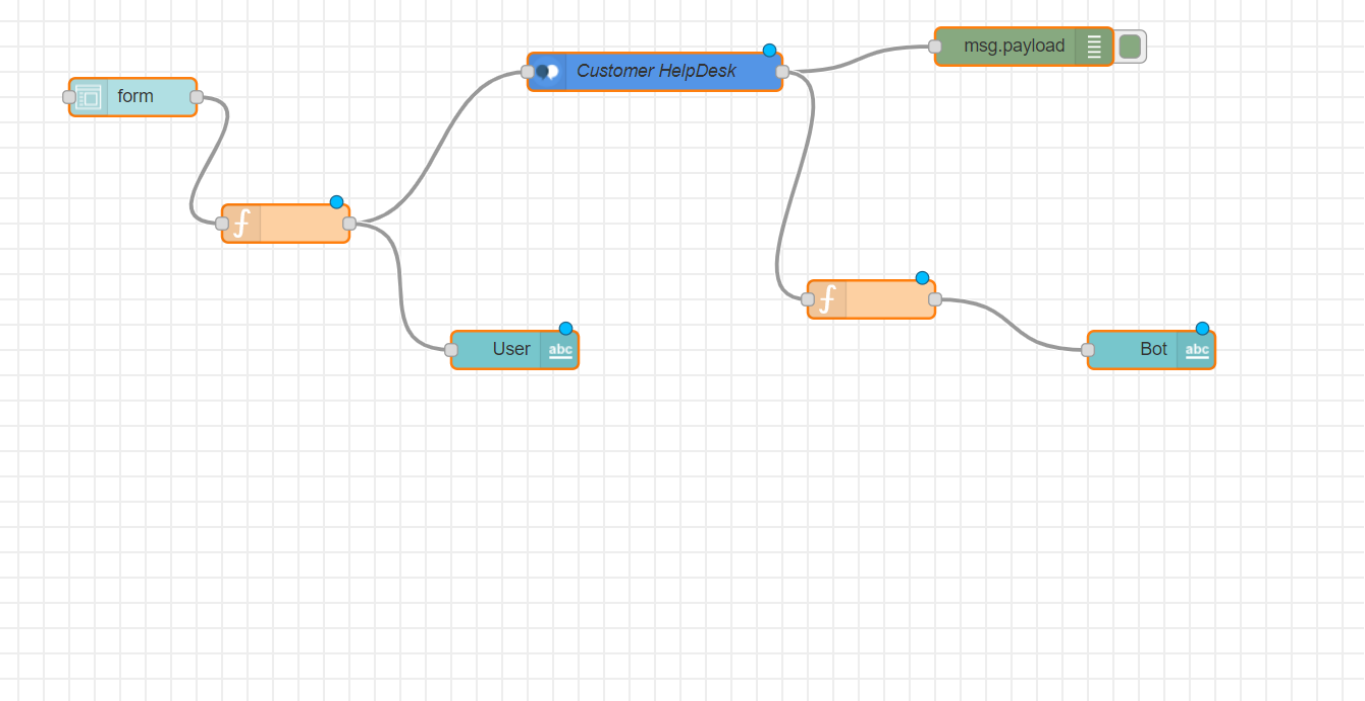
2) Configure Watson Discovery :
After creating and launching the discovery from the catalog, import the document on which we need to train the discovery service.we have selected ecobee3 user guide located in the data directory of our local repository. The ecobee is a popular residential thermostat which has WiFi and multiple configuration options.

5) FLOWCHART:

Insert the following nodes into the node red flow :

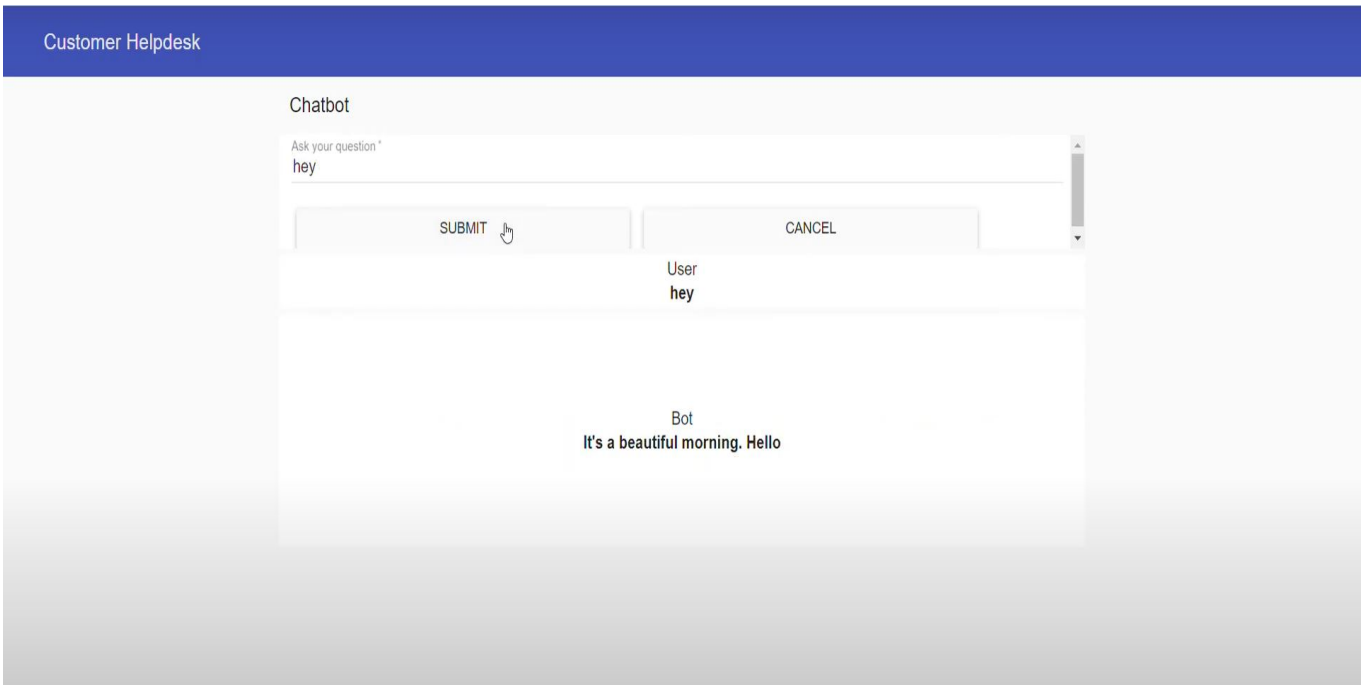
1. Form
2. Function
3. Text
4. Watson Assistant
5. Debug

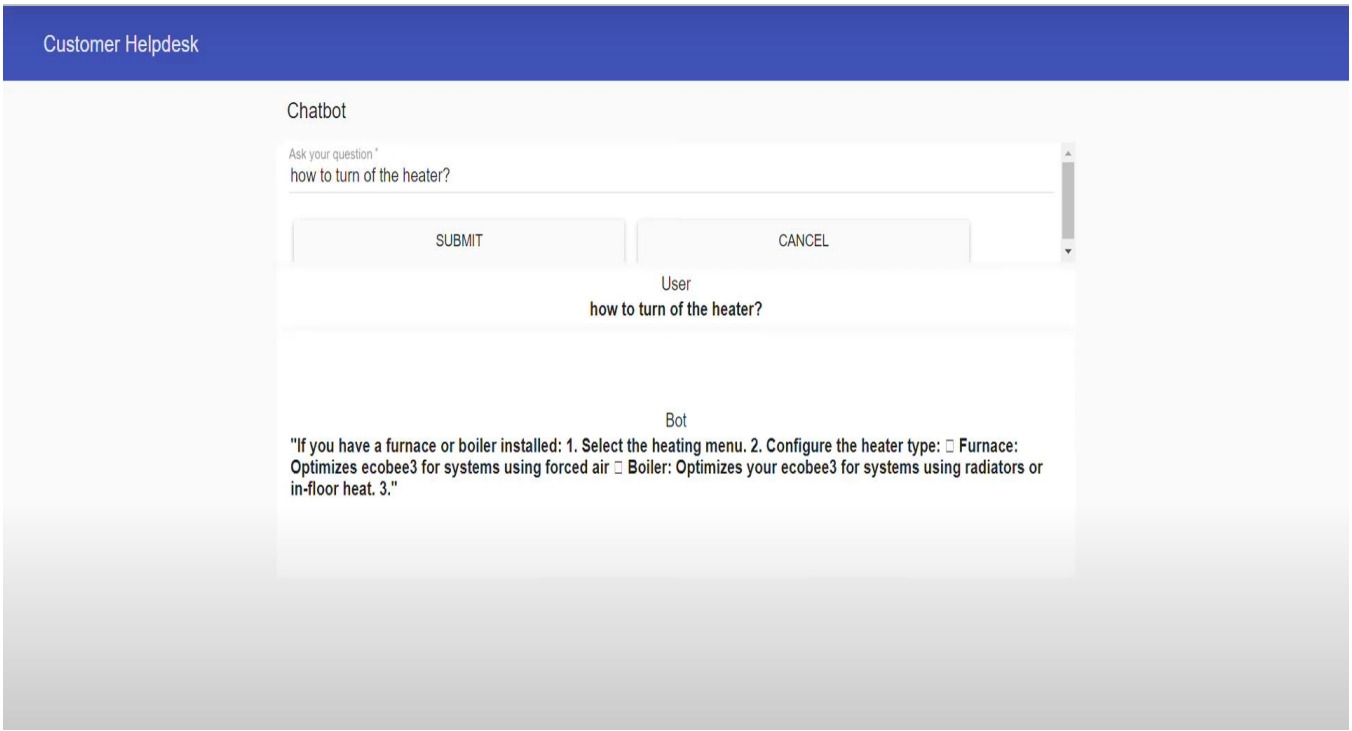
Visit this link for Node-red application:
https://node-red-jejeg.eu-gb.mybluemix.net/red/

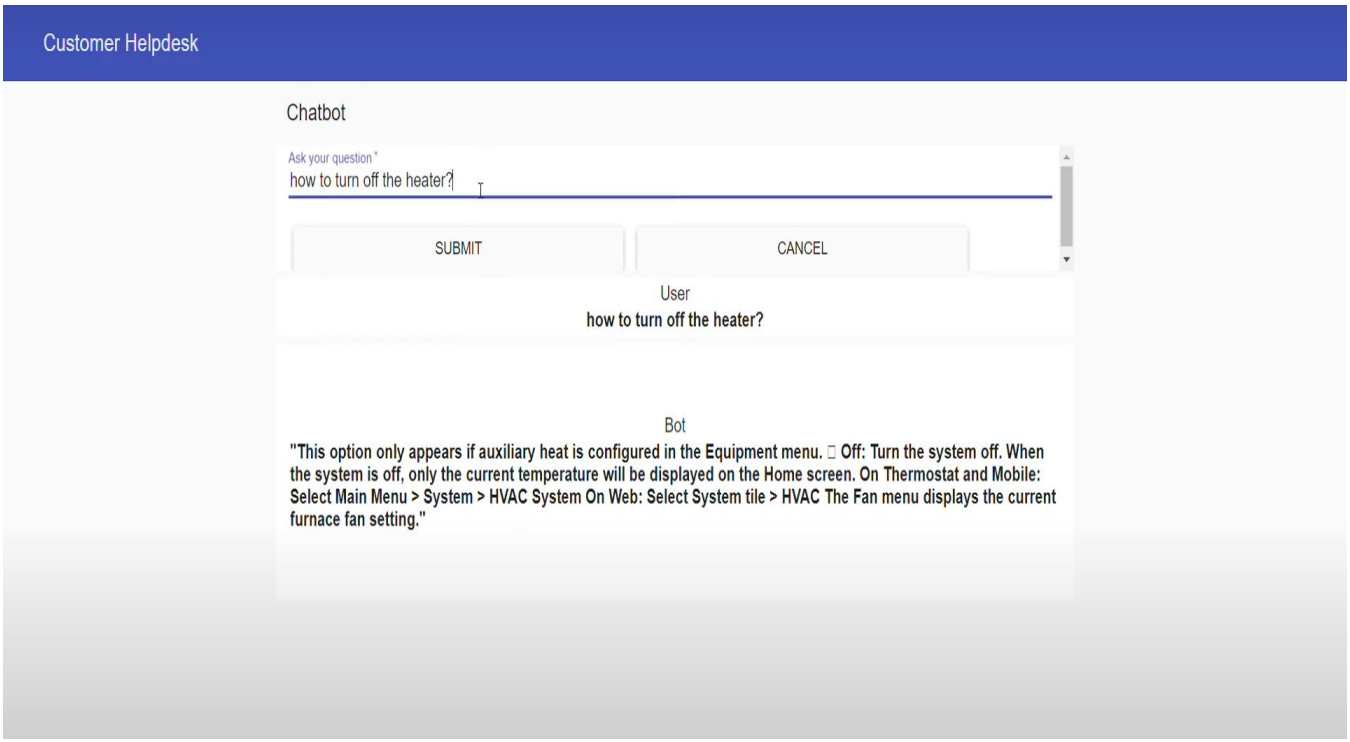


6) RESULT :

Visit this link for chat bot :
https://node-red-jejeg.eu-gb.mybluemix.net/ui/#!/0?socketid=1mwx7I5cQ_sJpqpyAAAf


Customer Helpdesk
Chatbot
Ask your question *
hey
SUBMIT
CANCEL
User
hey
Bot
It's a beautiful morning. Hello


Customer Helpdesk
Chatbot
Ask your question *
how to turn of the heater?
SUBMIT
CANCEL
User
how to turn of the heater?
Bot
"If you have a furnace or boiler installed: 1. Select the heating menu. 2. Configure the heater type: □ Furnace: Optimizes ecobee3 for systems using forced air □ Boiler: Optimizes your ecobee3 for systems using radiators or in-floor heat. 3."



7) ADVANTAGES AND DISADVANTAGES :

Advantages :

Companies can use these to decrease the work flow to the representatives.
Reduce the number of representatives.
Cost efficient.
Decrease In the number of calls diverted to representatives.
less work load on emmployees

Disadvantages :

Sometimes the chatbot misleads the customers.
The discovery returns wrong results when not properly configured.
Giving same answer for different questions.
Sometimes it is unable to connect to the customer's intents

8) APPLICATIONS :

It can be used as customer care serives for small businesses.

it can bee deployed as social media chat bots on platforms like facebook,slack and telegram.

chat bot can be deployed to serve any basic questions or queries that the users might have.

9) CONCLUSION :

By following the above mentioned steps, we can create a basic chat bot which can help us to answer the basic questions of the custoer or user related to location of the office, working hours and the information bout the product. We successfully created the Intelligent help desk smart chatbot using Watson Assistant, Watson Cloud Function,Watson Discovery and Node-RED.

10) FUTURE SCOPE :

We can improve our accuracy in giving the correct replies by asking the users if they found the chatbot to be useful at the end of every conversation and if not, we can ask them why.
We can import the pre-built node-red flow and can improve our UI, moreover, we can make a data base and use it to show the recent conversations that the users had with the bot.
There is another possibility of making the bot recognize voice which can help some disabled users.

11) BILIOGRAPHY :

Node-RED starter application :
https://developer.ibm.com/tutorials/how-to-create-a-node-red-starter-application/

Build your own AI assitant :
https://www.youtube.com/embed/W3iPbFTAAds

Watson Discovery and smart document understanding:

https://www.youtube.com/embed/Jpr3wVH3FVA

IBM Cloud Functions :

https://www.youtube.com/embed/G3bqRndQtQg

APPENDIX :

Source Code for cloud functions :

```
const assert = require('assert');
const DiscoveryV1 = require('watson-developer-cloud/discovery/v1');

function main(params) {
  return new Promise(function (resolve, reject) {
    let discovery;
    if (params.iam_apikey){
      discovery = new DiscoveryV1({
        'iam_apikey': params.iam_apikey,
        'url': params.url,
        'version': '2019-03-25'
      });
    }
    else {
      discovery = new DiscoveryV1({
        'username': params.username,
        'password': params.password,
        'url': params.url,
        'version': '2019-03-25'
      });
    }
    discovery.query({
      'environment_id': params.environment_id,
      'collection_id': params.collection_id,
      'natural_language_query': params.input,
      'passages': true,
      'count': 3,
      'passages_count': 3
```

```
    }, function(err, data) {
      if (err) {
        return reject(err);
      }
      return resolve(data);
    });
  });
}
```