Project Report

Intelligent Customer Help Desk with Smart Document Understanding

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1. Introduction

1.1. Overview

The project Intelligent Customer Help Desk with Smart Document Understanding was taken under the mentorship of Smartinternz platform. The focus of the internship will be to write an application that leverages multiple IBM services like Watson Assistant, Watson Discovery, Cloud Function and Node Red and will also learn to make a robust information retrieval system with Watson Discovery and Watson assistant.

1.2. Purpose

The aim of the internship was to explore, understand and utilize the different services provided by the IBM and combining them to create a useful application to tackle real life problems.

The project is to develop a smart customer care chatbot which can not only answer the normal questions but can also resolve some complex queries of customers with some proper training instead of returning some hard-coded answer like “I didn’t understand the question, please rephrase it.” This can save a lot of time of customer care representatives and the customers. The chatbot can be trained with the manual of a particular product and then can answer the queries about device operations.

2. Literature Survey

2.1. Existing Problem

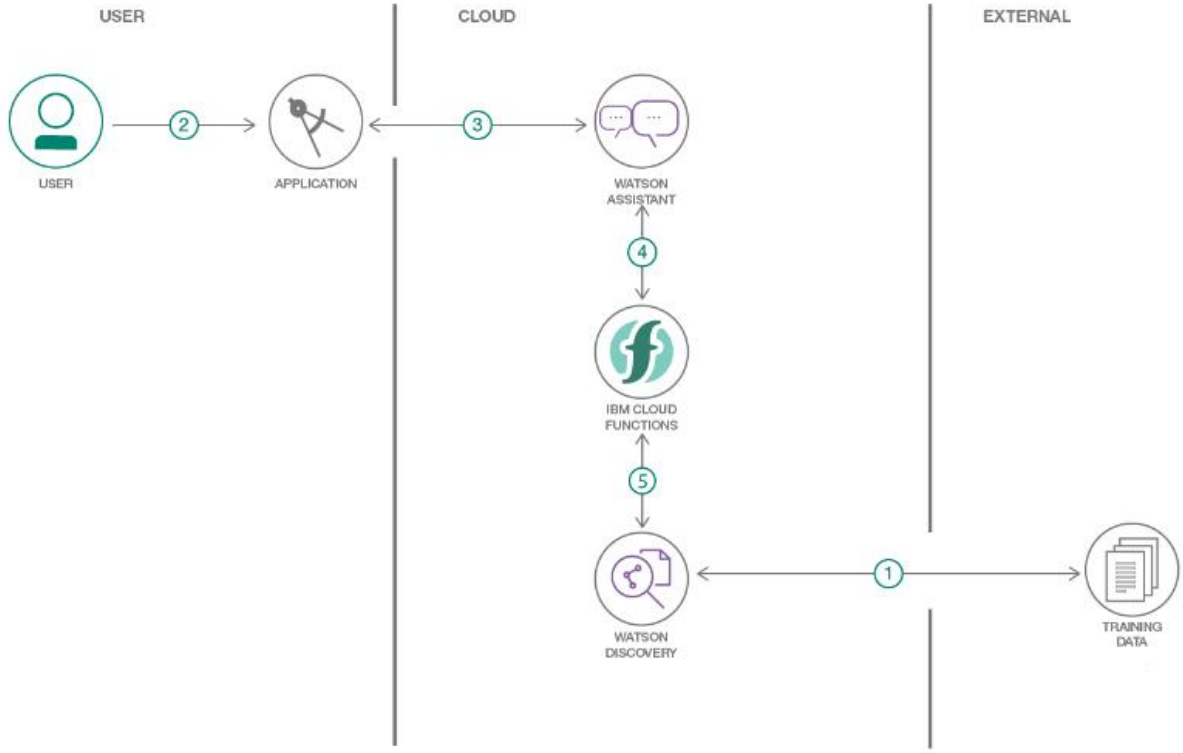
Chatbots nowadays, are programmed to answer some specific questions and are not able to answer the questions out of the scope of the pre-programmed questions and redirects the customer to the customer care representative. A good chatbot should minimize the involvement of the customer care representative.

2.2. Proposed Solution

For achieving above purpose, the chatbot should be trained and get familiar with the product manual so that it can answer the complex queries also.

3. Theatrical analysis

3.1. Block Diagram



i. The product manual is annotated utilizing Watson Discovery SDU
ii. The client connects with the backend server through the application UI. The frontend application UI is a chatbot that connects with the client in a discussion.
iii. Exchange between the client and backend server is composed utilizing a Watson Assistant discourse expertise.
iv. In the event that the client asks an item activity inquiry, a hunt question is passed to a predefined IBM Cloud Functions activity.
v. The Cloud Functions activity will question the Watson Discovery administration and return the outcomes.

3.2. Hardware/Software Designing

i. Create IBM Cloud services
ii. Configure Watson Discovery
iii. Create IBM Cloud Functions action
iv. Configure Watson Assistant
v. Create flow and configure node
vi. Deploy and run Node Red web-app

4. Experimental Investigation

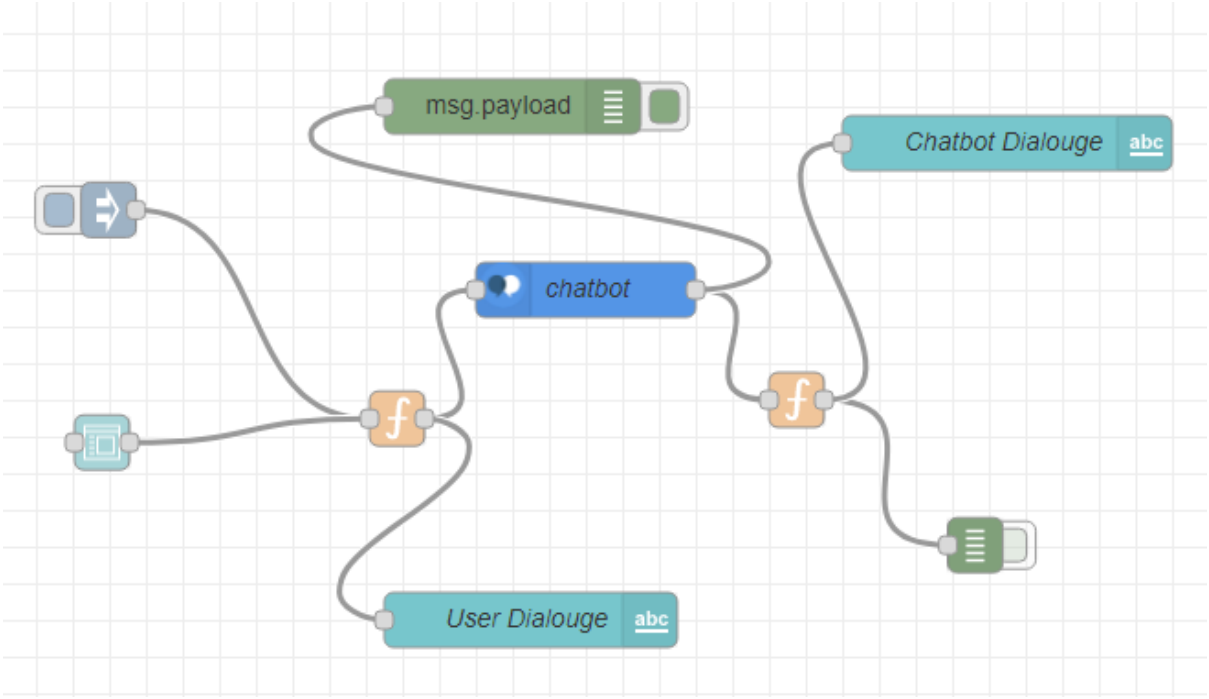
i. Configure Watson Discovery

Upload the required document and annotate all the text with different field like title, subtitle, text, footer etc.
Index the document by Title, subtitle and text field and divide the document with the subtitle fields
Run the test queries to see if the SDU works properly

ii. Setting up IBM Cloud Function

IBM cloud function will be used to make queries against our Discovery collection.
The function will be given some input and it will pass this input to the Watson discovery and fetch the output.

5. Flowchart



6. Results

At the end of the project we developed the chatbot which can recognize the queries which are related to the device operation and can answer the question by finding the answer in the device manual. The link the final output and working chatbot is mentioned below.

https://node-red-pngvu.mybluemix.net/ui/

7. Advantages & Disadvantages

I. Advantages

- Companies can deploy the chatbots to solve simple and common human queries.
- It can significantly reduce manpower.
- The chatbot is cost efficient.
- There is no need to divert calls to Customer care representatives for some simple queries and the representative can utilize his time for some other task.

II. Disadvantages

- Sometimes answers of the chatbots can be misleading.
- Giving same answer to different sentiments.
- Sometimes chatbots cannot identify the sentiments and intentions of the customers because of some reasons like Network or Technical issues.

8. Applications

The chatbot can be deployed on almost any website or application to resolve the customers' queries and also the bot can be deployed on many social media platforms like Facebook, Slack, Telegram etc.

9. Conclusion

By finishing the project, we managed to develop an intelligent information retrieval system by combining multiple IBM cloud services like Watson Assistant, Watson Discovery and Cloud Function.

10. Future Scope

- Accuracy of smart document understanding can be increased by using some additional training and involvement of some websites can also be done using Watson Assistant learn skill
- With use of text-to-speech and speech-to-text service the chatbot can be accessible handsfree.

11. Bibliography

a) Source Code

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b) References

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