

# The Design and Implementation for the Chatbot for 2d Search, a Search Platform with Visual Approach

Name: Weiying Qian

## Abstract

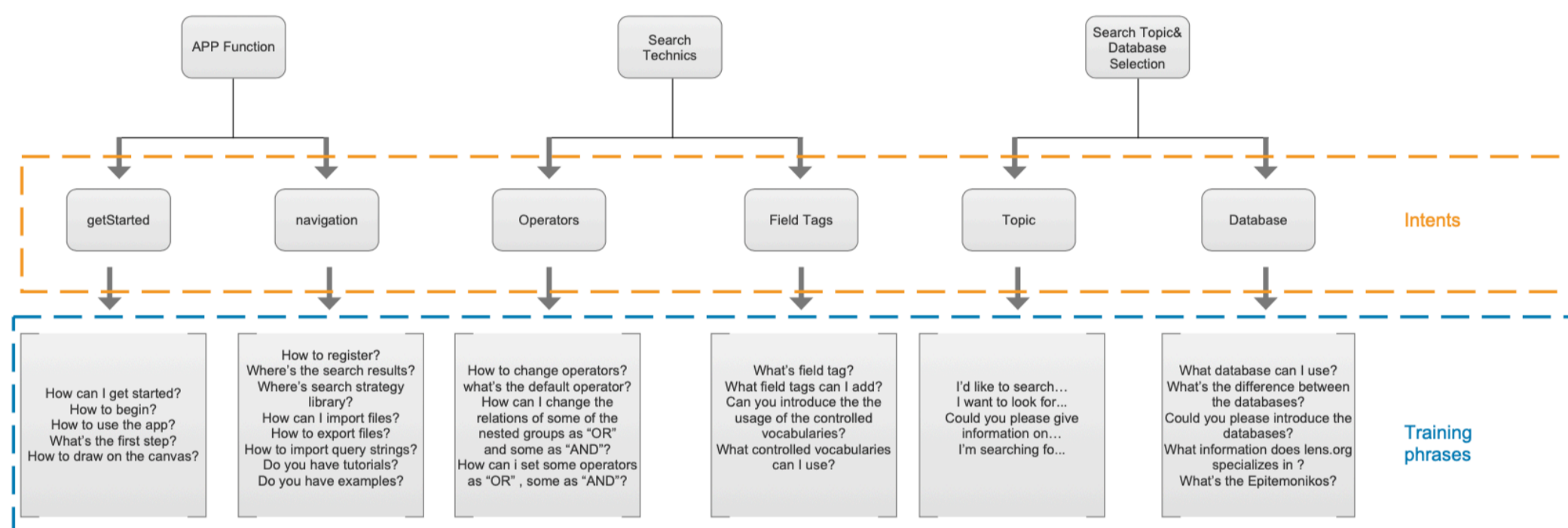
These years chatbots technology improved with the advances in machine learning and natural language processing and got increasingly popularity in terms of business and service. Chatbots have also been explored in new areas like information retrieval: Library Chatbots, for instance, respond to a various customer inquiries with information specifically tailored to the customer's demands. In this user-centred design project, a chatbot is designed for 2D Search, an advanced search platform with a visual and structured approach. 2DSBot incorporating all forms of in-app support including guidance, notification and recommendation would help supporting a easier and more user-friendly usage of the search app. Relying on the *Dialogflow*, a chatbot building platform developed by Google, the dialogue system of 2DSBot was modelled to cover all potential utterances between end users and the system. On top of that, a prototype by *Axure* simulates the complete user journey and user experience by involving the conversational interfaces and interaction style.

## Introduction & Background

This radical changes in search method of 2d Search might lead to unfamiliarity and difficulty when users get the first use. 2DSBot incorporating all forms of in-app support including guidance, notification and recommendation would help building a easier and friendly usage of 2d Search. Modern agents are frequently used to perform simple tasks in vertical business domains, but there're few chatbots in the fields of information retrieval. 2DSBot would be quite experimental in that field.

## Diagram / Design

Based on the use scope of 2DSBot, for each of the use case: APP Function support, search technics support, search topic support and database recommendation, intents are designed for the system to meet users' conversational intentions. Under each of the intent, training phrases, which are referred to as end user expressions, are entered to match the intent.



## Specification & Implementation

Dialogue system contributes to the key part of the chatbot, as it determines the use scope of the system. On top of that, the conversational interfaces that dealing with liner flows and interaction styles play key part in the user experience. Therefore there're two version of prototypes in this project, one is the live chat version relying on the Dialogflow platform that mainly deals with the language systems of the 2DSBot, the other one is a prototype that mocks up the entire user experience of the conversational interfaces by using Axure.

## Testing & Evaluation

To validate the prototype, two groups of participants would be recruited: First- time users and Experienced users. The test on the first-time users will mainly focus on the live chat prototype: to see their performance of the task with the support of the chatbot. As experienced users have well known the search app before, there might not be much point to see how their performance improve with the support of chatbot. Instead, experienced users are recruited to do surveys after finishing test on the mock up prototype: to see what aspects of the dialogue system needs to be improved.

## Conclusions & Future Work

In this project, 2DSBot was designed and implemented to support the usage and function of 2d Search app, an advanced search platform adopting a visual and structured search method. The chatbot demonstrated its intelligent ability as well by offering functions like recommendations and predictions, which, however hadn't been coded to reality due to the technical restrictions. Dialogflow, an open-source chatbot building platform modelled the dialogue systems, covering all the potential dialogue topics flowing between systems and end users. Based on the usability test and evaluation analysis, the scope of dialogue system needs to be enlarged and requires advanced designs including adding follow-up intents to make the dialogues flow more naturally. Meanwhile, the evaluation shows that the necessity to offer tutorials on the basic usage of 2d Search as well as inform users the value of the app and how the structured search works at the beginning of the dialogue flow. The above inspirations from the evaluation have been updated in the prototypes. The reason to deliver two versions of prototypes is that due to the restriction of technical ability personally, the dialogue system modelled in Dialogflow cannot be integrated with the conversational interfaces prototyped in Axure. In the future, it will be perfect for the project to combine two versions of prototypes either through lines of codes or API. Meanwhile, the usability test and evaluation turned out to rely mostly on qualitative analysis. Future work would be conducted to introduce quantitive methods and more evaluative frameworks to test the prototype.