

CSE5911: Capstone – Software Engineering

Chat Assistant iBot

Individual Report

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Background

With the rapid development of technology these days, projects and research become more and more complicated. It already takes so much time for IT staff to design and build their technical projects. However, some tasks they do every day require cumbersome steps and unnecessary complexity. Therefore, they do need a product to help them with it. This project our team work on is a chat assistant which aims to solve this problem. The project, which is called iBot, is an intelligent bot which has Natural Language Processing Services integrated and interacts with issue and project management tools such as Jira, and continuous integration tools like Jenkins so that it helps turn inefficient steps into dialogs to increase productivity for all employees. Currently, iBot supports channels like Skype, Slack and Facebook Messenger. The project management tool it supports is Jira. In future, iBot will support more and more DevOps tools such as BitBucket and Jenkins.

Personal Contribution

For this project, the main role I chose was Code Manager and the secondary role I chose was Test Manager. My responsibility is to cooperate with project manager to make sure that the project is going smoothly and keeping moving forward. We

were trying to make the parts that each member did to be independent to each other so that each member can work on their own and doesn't block others. Also, I was responsible to make every person in the project to be in the same page. For example, when Yun was having problem with setting up the environment, I helped her to set up environment of Node.js and BOT Framework. If there would ever be times where the project was beginning to fall behind schedule, either due to requirements collection or feature development, I would step in and do what was necessary to get the project back on pace. For example, when Xuzhou has problem with getting familiar with the concept of callback function in Node.js. Everybody in the project is very cooperating especially when exploring the possibilities of new technologies. Each member had their own unique set of abilities and each member was leverage in their areas of expertise.

As a code manager, my main job is to explore the technologies that fits into our project scope. For example, at first, I helped our team to decide to use BOT framework instead of using Amazon Alexa because Alexa voice recognition is not suited in the office setting. I discussed with Xiao about our architecture.

In the early stage, I helped to train LUIS model by inputting utterances which takes me a lot of time. I also developed a mongodb database module which interacts with Xuzhou's authentication module to help with storing tokens, channel ids, and jira ids. Authentication process is involved with finding the current skype user and matching it with jira account. This is crucial in the switching account process.

I also cooperated with Xiao in fuzzy search functionality. For fuzzy search, we use haystack algorithm which is a simple open-source algorithm. To explore this, personally I tried Fuse.js which is a mature technology. At last I gave it up because it will use a lot of memory which jeopardize the responsiveness of iBot.

Also testing of this project accounts for a great deal because the regular automation test cannot fit into our situation. For example, the mocha testing module I tried earlier was not helpful for the most times because it can only test simple cases which test whether iBot can only say hi or not. Manual tests turned out to be really useful. I spent a lot of time writing manual tests and record the bugs found.

I also helped Xiao to convert JavaScript to TypeScript for the whole project. I helped designed the interfaces in the model module such as board, issue, sprint and user. I also helped Xuzhou to design the cookie interface which is closely related to database module. For documentation, I also took part in every single presentation or report including midterm report, final presentation and NetJets presentation. I was responsible of arranging most of the meetings and presentation rehearsals.

Lesson Learned

1. Node.js

Node.js is the core of this project, what it impressed me at most is its asynchronous programming style. Letting the function do its work and get the result to you when it finishes. This is especially helpful in our project because iBot needs to react fast and asynchronous style is the best way to do this.

2. Microsoft BOT framework

BOT framework has a waterfall structure which really impressed me. Its idea is to combine a series of action into array. This idea can be used elsewhere in my future

3. LUIS

LUIS is close source language understanding service. Developing own language processing service is impossible. So in this case, adapting to others' framework and learning from it is crucial.

4. Agile Management

Agile management methods turn out to be really useful in our project cycle. I know this method is widely used in the industry. I will have a deeper understanding of it when I have a new career.

5. Team Cooperation

This project, we four people are very cooperative, we have a lot of fun in working with each other. Everybody is trying their best.