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University of  
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Computing

# CHATAHOLIC

CO600 GROUP PROJECT

INDIVIDUAL REPORT

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## **Introduction**

Born with the idea of ‘Serving social needs with technology’ and the belief that ‘a contemporary project should be interdisciplinary’, Chataholic endorses the great blue print catering for the huge social demands for a better communication in this globalized world. Aiming to meet people’s desire of high-quality communication and relationship, the project was designed with the functions (online chatting etc.) of supporting social media, and providing pairing based on a series of algorithms built upon the psychology for personality digitizing. Hence, as a group project, it required us to explore and gather information together and learn and implement new skills, and bestowed us with decent returns including valuable experiences in task assigning, development cycles optimizing, file managing, cooperating, etc. With great completeness and complexity, Chataholic, though bearing the nature of a special university project, provides a more intact development cycle for developers, thereby deserving the painstaking efforts of all my teammates and I. Thanks to the challenges appeared herein and the process of figuring out possible solutions, I learned the true value and significance of the project, and firmly believe this report would facilitate our fathoming how literally the project is.

The project is supervised by Olaf Chitil.

## **Challenges**

The idea of this project occurred to me as I was pondering the possibility of bettering the communication between overseas students and meeting the huge demand for bonding in this globalized world. Enrolled in the program of computer science, I always consider it my responsibility to solve real-world problems with the technology and skills I learned or will have learned. Therefore, as the proposer, I spared no effort to pave the road for this project, and encountered plenty of challenges upon applying for the project and organizing a great group, including those in different domains as management, organization, marketing and psychology, etc.

### **Preparation**

The moment when I proposed my topic, many supervisors already got their ideal project and few were interested in such a general idea. Worse still, given it’s mostly about network and communication, the project could match the fields of a few supervisors’ only. In this case, I spent weeks bettering my proposal by preparing detailed information and illustrations upon dividing the whole project into four parts, namely, chat system, database, personality test and pairing algorithm, and interface. Thanks to the thought-provoking advices from those supervisors I met during the idea-promotion process, I kept bettering my project and eventually got a proposal with a basic development cycle and a better microscopical view for the project: it should be categorized into software engineering, one of the research fields of my supervisor Mr. Olaf Chitil.

### **Coding and Implementation**

Involved in most part of the stage, I summarized the major challenges herein as follows: a design applicable to all platforms, file management and version control, chat system, and the implementation of the psychological algorithm.

After defining our app’s portability and accessibility at any time on any devices, we came up with the idea of coding it with Android studio at first and then transferring it to desktop and iOS. Considering our workload has tripled owing to the decision, we had to reschedule the

plan and made it possible to finish the project in time. By searching and referring to other all-platform applications, we decided to adopt the design of API (http) for the following reasons: firstly, http was the easiest API we could access and web-based application could be run on any devices. Secondly, based on html and JavaScript, web-based application could reduce the impact of time limitation given it's easier to be coded. Thirdly, it would be more convenient to push a web-based application onto an online server.

As a group, we got different missions and work flows. Hence, file management and version control did become a Gordian knot at the beginning, for it would seriously influence the progress of the project when merging different versions. Thanks to the assistance of GitLab and its strict rules for file updating, we solved the problem by bettering our version control via a regular updating of source code.

Owing to its complexity and heavy workload, Chat system became another challenge, for it required new skills concerning online chatting, the storage of history, and message broadcast. Inspired by the solutions of similar apps, we solved the issue by broadcasting messages with web-socket and storing the message of non-real time chats into databases.

Responsible for the psychological algorithm, I was actually confronting a greater challenge considering the interdisciplinary nature of this task. With the purposes of digitizing users' personality and finding out the relationships among different personalities, I did some researches on possible solutions and finally turned to the Myers-Briggs Type Indicator (MBTI), a test focusing on human behaviors.

## **My Contributions**

Except for helping with the challenges above, my contributions were mainly about the design and implementation of the algorithms.

### **Research and design**

Aiming at bettering my understandings of the MBTI test, and turning it into a classification algorithm, I studied the test via the papers concerning MBTI basics (The Myers-Briggs Foundation, 2014) and MBTI Manual (Myers et al., 1998), and learned the knowledge regarding the decision-tree classification algorithms from datamining lectures. The reason for my choosing MBTI as the psychological tests herein lies in the fact that MBTI are highly acknowledged in the international community and even used for job assigning by many giant companies.

My explorations into the MBTI is actually a classification process, given the test, in accordance with the aforementioned papers, digitalizes people's personality in four dimensions with ninety-eight questions for different behaviors. Upon noticing that different questions actually reflect one dimension of personality, I classified these questions based on the criteria in the four dimensions and created a calculation rule accordingly.

By simply adding up the score for related dimensions, the calculation rule effectively avoided the occurrence of an overcomplicated self-assessment process, which would not only lead to a bad user experience in this commercial application, but decrease the accuracy of the test owing to the psychological hints therein.

Finally designed in the form of a decision tree, the algorithm would go through the four dimensions orderly by moving into the next upon the completion of the dimension before.

Though there's another simple classification model called naïve bayes, the tree structure is much closer to the either-or model in this case.

### **Implementation**

The implementation was divided into two parts: the questions presented and the calculation. An interface for avoiding tediously long questions was designed together with the function of managing and amending the question library. Loops are used herein for calculations to avoid repetitive codes.

### **Difficulties**

Given my limited preserve in psychology, I ignored the flexibility of peoples' minds, and the over-simplified calculation also led to a large instability. Worse still, considering the fact that the project was tested only by a few users, it's nearly impossible to make further improvements.

## **Knowledge and Learning**

### **Idea**

A fun fact I learned is that an increasing number of successful projects today bear interdisciplinary natures. In other words, interdisciplinary projects would enjoy longer life cycles given they're much closer to the similarly complicated human life. Hence, it's necessary to build the bridge among different domains, and computer technology could serve as the binder here given its ability to digitalize and concrete.

### **Coding**

In a practical project like Chataholic, coding experience shall be one of the most valuable returns we could achieve. By using tools including React, WebSocket, NodeJS and MySQL Database, we've applied the coding languages of JavaScript, SQL and HTML, and learned a lot of functions such as user identifications, the link between application and database, the broadcast between users, etc.

Given the whole project processed over twenty files, managing the code and improving the functions did become unavoidable challenges. The issues concerning file management also forced us to set up feasible rules for the coding style at the beginning of the work, from which we learned that a clean code and a sound logic are definitely the foundation for the cooperation in a large project.

### **Cooperating**

As a decisive factor in a group project, cooperation matters especially when we're working on feasible schedules and communication methods, for a successful group project does require the loyalty to timelines and effective regular meetings, especially when we try to solve problems face-to-face.

## **Conclusion**

Generally, I deemed this project successful despite of some regrets. Except for bestowing us with the experience for real applications which contains the design of structure, the implementation of different parts, and the consideration on user experience, the project also blessed me with coding skills, and most importantly, the knowledge in a different domain.

The regret here is that, due to time limitation, we cannot push our project onto an online server or modify the inaccuracy of the algorithm with more improvement measures.

However, by working as a group, we learned how great it is to combine our strengths together and what great thing we can create with our technology. In this case, we believe we've achieved great success as a team.

## **Reference**

The Myers-Briggs Foundation, "MBTI basics", 2014, Retrieved 18 June 2014. Available from: <https://www.myersbriggs.org/my-mbti-personality-type/mbti-basics/home.htm?bhcp=1> [Accessed 5 April 2020].

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