Research Project Report

Develop and Implement a Test Strategy for a SW Platform

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Thanks to the support of McGill University, German Academic Exchange Service (DAAD), I can get approved to take this summer undergraduate research in engineering which is hosted by Siemens AG under the supervision of M.SC Stefan Rothbauer.

Introduction

This research combines the fields of software engineering, computer science and electrical engineering, the applications of this research can allow for an inhouse platform and tools for model-based safety and reliability engineering.

During the research, the general field I worked on is dependability analysis and management. The main task for me is to develop and complete a reliable test system for the project.

General Research Process

Because of the requirements of my host institute, I can not show my data, materials and any graphs of this project in this report. But I will try to describe the general process as I can.

Before starting the project, I looked through papers and similar researches online to get enough background knowledge. After the safety training and project workshop, I gradually got familiar with my working environment.

Since the group has already built the project structure, I decided to first build some simple tests to get familiar with the project. By using Java Junit, I created some basic test cases and launchers. Then I used EMMA, a free Java code coverage tool, to check and improve the test coverage.

Next, according to the background knowledge and researches online, I selected and listed some test structures to make the comparison.

Then based on the comparison, I decided the best structure and complete every unit test for each main method.

The Daily Life

The life during this research is great. I worked in a collaborative atmosphere in an international (more than 5 nationalities) and interdisciplinary (more than 20 working groups) environment. Most of the time we eat lunch together, and it was really relaxing. Apart from that, there is a group meeting every week, people make presentations about their projects during these meeting, so I luckily got the chances to learn something interesting. By the daily work or communications with my colleagues, my teamwork ability and communication skills got greatly improved.

Munich is a nice and beautiful city, the transportation is very convenient, people can get nearly everywhere in city by bus or tram. People in Munich are also friendly. Although most of the street

signs are written in German, people are always happy to help English is really common in this city. My supervisor helped me to get a student traffic card and also offered me many recommendations about finding the apartment, applying for bank account and so on.

The location of Munich is also really nice. It is one of the biggest and famous cities in Germany, so many trains and buses go through it. I always take a trip with my friends during the weekend. We even took the train from Munich to Paris directly.

Although all of my colleagues can speak fluent English, sometimes the conversations would slide into German. However, I don't mind this at all. I found it can be extremely helpful to improve my German language skill to hear native speakers converse, and my colleagues are really friendly, they are always happy to help me with my German whenever I ask for their help. By the end of this research, I was surprised to find that I can follow the main idea of the conversations and sometimes can even participate into the conversations in German.

Conclude

I really appreciate DAAD can offer me such an amazing chance to participate in this project. By taking this research project, I have gained precious practical experience and improved my communication skills. Moreover, I have got a further understanding of electronics and its application. I decide to focus on this field to work in a research institute in the future to repay society.