



Experiential Report

KPMG Ignition Tokyo

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<https://home.kpmg/jp/en/home/about/offices/tokyo-11.html>

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Introduction

KPMG is a professional services network with locations throughout the world. It provides various services in tax, audit, and consultation. As the centerpiece of technical R&D and solution delivery in KPMG Japan, KPMG Ignition Tokyo (KIT) houses international talents with a diverse range of skills and backgrounds, all working together in supporting transformation of business solutions with the latest technology in fields such as machine learning, blockchain, cloud computing, and IoT.

The company welcomes new ideas and skills by offering internship opportunities to undergraduate and graduate students. The majority of interns were hired from North America, with around three to four interns from the Canada Japan Co-op Program (CJCP). I was fortunate to be placed in an 8-month internship through CJCP, which has offered me invaluable skills and experience for my technical career, as well as new insights on the way of life from the lens of a different culture.

This report will summarize my work and living experiences during the eight-month internship in Tokyo, and will hopefully provide a guide for future students interested in working in KPMG Ignition Tokyo.



About the Organization

KPMG was founded in 1987 and is headquartered in Switzerland and the Netherlands. Operating in more than 150 countries with around 200,000 employees, KPMG is one of the Big Four accounting organizations. The firm follows a professional services network structure in which each national member firm provides services to clients as an independent legal entity.



KPMG Japan consists of seven member firms with a total of over 8000 people, each with a different role in providing tax, audit, and advisory services. The member firms have offices throughout Japan including Tokyo, Osaka, Nagoya, and more. With the vision of being The Clear Choice for clients, the organization emphasizes building a strong foundation of trust with clients and the society.

A member firm of KPMG Japan, KPMG Consulting is focused on providing services to support business transformation, technology transformation, and risk & compliance. The main Tokyo offices are located in Otemachi and Iidabashi. KPMG Ignition Tokyo (KIT), launched in July 2018, was recently separated from KPMG Consulting as an independent legal entity. But it still continues to play the main role in developing cutting-edge solutions for external and internal services. The company aims to provide diverse solutions which can assist clients in adapting to the competitive technological environment.

There are two main divisions supporting the company's strategic goals and delivering tech solutions - Innovations & Insights and DevOps & Engineering. Innovations & Insights is focused on communication with external clients and promotion of innovative design strategies; DevOps & Engineering is mainly focused on R&D solutions for clients and internal services, as well as the maintenance of infrastructure and security technology.



About the Position

The company hires interns across the different teams from countries all over the world. While each intern is assigned to a team, roles and responsibilities are diverse and flexible depending on the resource required for the specific project. Each intern typically works closely on projects with one mentor but also receives instructions and guidance from the team manager. Long-term projects are mostly research based and focuses on building innovative technology, enriching inhouse tools, and achieving company strategic plans. Short-term projects are usually completed within one to two months, and are delivered as solutions supporting digital transformation to external clients.

My internship position is placed as part of the Solutions team (Engineering), which consists of around ten developers focused on developing client solutions and building internal technologies. The areas of focus can be grouped into IoT, Blockchain, and Machine Learning. The team follows the agile methodology with involvement in regular stand-up meetings and sprint planning.



The working atmosphere at KIT is relaxed and opened compared to traditional Japanese companies. The solution team consists of members from countries all over the world, so communication in English is used the majority of the time. But basic knowledge of Japanese is still recommended as some projects involve working with Japanese documents.

Otemachi area near
KIT office building.

The nature of the co-op position is primarily software development with minor involvement in DevOps and research. My primary role in the department pertains to machine learning R&D, specifically in natural language processing. Some of the related projects include emotion detection, named entity detection, optical character recognition, and chatbot. Near the end of my term, I had the opportunity to take the lead role in homomorphic encryption research and API development, and to support performance optimization and testing in the blockchain team.

Project Experience and Skills Acquired

The first project I worked with was to detect emotion from applicant resumes using natural language processing (NLP). The project helped me familiarize with machine learning concepts and tools such as tokenization, feature extraction and common probability models, and also prepared me for the next NLP project - contract management system. The goal of the contract management project was to perform contract entity recognition using machine learning. I tested and benchmarked various OCR proprietary tools for Japanese, and learned to design, train and predict Long Short-Term Memory (LSTM) models with Tensorflow. Through many cycles of data cleansing, retraining, and fine-tuning of models, we were able to achieve high accuracy and improve the performance of the system. Once the trained models were ready, I moved on to the webapp development stage, in which I worked with a team of four in developing the backend using Django and Docker.

My third project was to design a fully homomorphic encryption API for the gender salary gap use case. The solution and design of the system was aimed to provide as an example in an upcoming secure computing hackathon organized by KIT. Homomorphic encryption was utilized to maintain full confidentiality and security of the original user data. The final system



designed was capable of supporting encrypted computation of simple arithmetic functions and ratio calculations. During this project, I gained knowledge on the processes and logic behind homomorphic encryption by conducting in-depth research on the topic, creating architecture diagrams for the system and api, and designing a viable solution for the division challenge.

In the last month of my internship, I was assigned to the blockchain team as support for the final stage of a major blockchain project. My main tasks were to implement integration and unit tests using a python framework, optimize extraction scripts with multithreading, and validate block information with aws and node communication. From testing and interacting with processes such as node extraction and balance calculation, I gained important concepts about blockchain as well as experience of working with docker containers and volumes, and interacting with the AWS server on ubuntu.

Aside from the technical skills, the dynamic and challenging nature of the position also allowed me to improve my analytical and problem solving skills, and practice thinking critically and outside the box. I was able to develop solid relationships with my manager, mentor, and team colleagues, who have supported my knowledge and skill growth and provided helpful feedback throughout my internship.

Academic and Career Development

Internship at KIT introduced new paths and choices to my academic and career planning. I have gained a clearer understanding of my aptitude and interests during the eight months as a software engineering intern. I was able to work on developing some of the most cutting-edge technology in the industry, which I have little experience of when I started the internship. By being involved in the various processes of machine learning, in particular natural language processing, I have developed many critical skills and gained valuable knowledge in the domain. The amount of potential in machine learning and in encryption technology gave me new goals to learn and improve my knowledge, whether in future research or work career. I think it is both motivating and rewarding to see learned concepts in school applied to solve real-life problems. In addition to the specialized skills in machine learning, secure computing, and blockchain, the skills that I've acquired in source control (Git), devops (Azure and AWS), and computer networking will continue to grow and benefit me in my future career.



View of street near sharehouse neighborhood.

Living Arrangement

My housing arrangement in Tokyo was assigned and covered by the company. Interns from CJCP lived at the same sharehouse, which offered common dining room, kitchen, and shower rooms. The sharehouse offered good privacy but also opportunities to make local or foreign friends.

View of room window at the company assigned sharehouse.



Commute to work takes around 25 minutes by train from the nearest Kasai station. There are convenience stores, supermarkets and pharmacy all within short walking distances for shopping of necessities and food. Plenty of parks are also in the area like the Kasai Rinkai Park which offers views of the ocean and Arakawa Riverside Parks which hosts hanami in the spring.

Cherry blossom trees along Arakawa River in the nearby neighborhood.



Cultural Experiences

During my internship I had opportunities to travel in Tokyo and around Japan, in particular around the Kansai region (Osaka, Kyoto, Nara), Enoshima, Yokohama, and Karuizawa. Tokyo alone has more than enough scenes and places to discover and enjoy within the short eight months. Outside of work, I spent most of my time traveling around the different districts in Tokyo and immersing in their different personalities. The preservation of rich history and attention to modern aesthetics means that often in the same frame, one could see ancient streets, traditional gardens, and futuristic skyscrapers. The feeling of traveling in time is something I think is most unique and unforgettable about Tokyo.



Traveling during the different seasons in Japan also offered new sceneries and memorable experiences, such as cherry blossom viewing in spring and firework festivals in summer. Within Tokyo, traveling with the metro and train system is convenient and fast, but required some time to adjust to due to the number of lines and stations in the city. There are various choices for commuting across prefectures, such as the shinkansen and night buses. Tourist information centers also sell discount travel packages which offer deals for sightseeing and commuting around a region.

I was fortunate to be in Japan to witness perhaps one of the most important historical events - The start of the Reiwa Era. In May, Japan welcomed the new Era and emperor with the celebration of a longer ten-day Golden Week. Celebration could be seen not only on the news but also in store products, books, food, and shrines. During this holiday, I stayed in Tokyo but enriched my knowledge of the culture through adventures of collecting special shrine stamps and going to different local bathhouses.

Recommendation

From my internship experience at KIT, I would recommend future students to be familiar with source control tools such as Git, and object oriented programming. While different skills and concepts related to machine learning, IoT, and blockchain may be used at the job, excellent problem-solving and analytical skills, and team project experience will also prepare one for new challenges.



As a part of Japanese culture, respect and work ethic are essential attributes to have in the workplace. The society is largely built on trust which cannot be simply gained overnight, and requires real evidence of ability and character. This attitude towards work is embodied by almost everyone at KIT regardless of where they are from. To succeed in the demanding and fast-paced environment, I think personal skills such as the ability to learn new things, be self-disciplined, and communicate effectively will also be important.

Life in Japan is not difficult to adjust to if one maintains an open-minded and positive attitude. While people are friendly and used to foreigners, basic knowledge or research of Japanese language and typical customs will still be beneficial in helping one adapt to the culture.



View from hilltop in Nara

Overall Impression

Working and living in Japan has enriched my personal life and technical career. All the places that I visited and the people that I met during this internship has taught me to be grateful and humble. Having the experience of immigrating to a new country, adjusting to another culture was not difficult, but nevertheless I gained a completely new perspective on the way of life and learned to embrace differences. Every culture's unique set of values is treasurable and has a history and future formed by the people who carry it.



Like the marks made by the moving waves, places and people are constantly changing in state as time progresses forward. As the first time living on my own and in a foreign country, there have been low and high tides during the eight months, but it is through the lower tides that I was able to see clearer what is important under the surface.

As my internship approached its end, the feeling of travelling was gradually replaced by the feeling of home. This made me realize that home is where the heart is, and that there is little to worry where I go next. All these unforgettable experiences and valuable knowledge that I've gained would not have been possible without the Canada-Japan Co-op Program and KPMG Ignition Tokyo. Thank you for the opportunity. I am definitely glad to have made the decision to come to Japan.