

## **Ishikawa Internship 2019 Report**

### **PFU Limited**

This past summer, I had the opportunity to work as an intern in the Imaging Operations Headquarters team at PFU Limited, a company of Fujitsu. PFU Limited is a technology company that provides software and hardware solutions for business management, known for products like their documents scanners, interactive KIOSKs, and embedded computer systems. Throughout the internship, I was trained in using deep learning—an artificial intelligence function—to ultimately aid in the sorting of company reports and forms.

Every workday, I would commute by bus and train to the office for a day that would start at 8:40 AM and end at 5:15 PM. The department I was placed into was quite small, comprised of 9 other individuals. I worked closely with 2 of them, as they were my supervisors—I met regularly with them to be trained or to share my work and ideas. The relatively small size of the department allowed me to interact with each of the individuals on a regular basis throughout my time there and gave me more responsibilities as an intern.

The project that I was assigned to was to find and test a deep learning tool, one that could be trained and improved to fit the needs of the company. Because of the long-term nature of this assignment, each week was a bit different in terms of what I worked on. Firstly, I was introduced to the concepts and mechanisms of artificial intelligence and deep learning by one of my supervisors. I then did research on available tools suitable for companies like PFU Limited and would compile various documents and PowerPoints to present my findings and communicate any suggestions that I had. After making a decision on which tool to use, I compiled, annotated, and programmed data to train various deep learning models, then evaluated the results and worked to further improve the accuracy of those models. At the end of the internship, I created another document and PowerPoint to present my work and final ideas to the entire department.

Prior to this summer, I chose to apply to this internship because I sought to improve my Japanese in a professional environment and to gain an understanding of the business culture in Japan. As a chemistry major interested in dentistry, however, I was initially a bit worried due to the fact that I was unsure about how I would be able to contribute to the company and how I could apply the knowledge and experiences of this internship to my future endeavors. Nonetheless, I was able to communicate my skills and knowledge to my supervisors, which allowed them to design a project for me that I would find challenging, yet manageable. Through my research, I also found numerous applications of deep learning to cases relating to my interests—particularly in dental imaging—and I even trained a model to help with the annotation of medical images. I learned more about recent artificial intelligence projects in the medical realm, which provided me with the reassurance that I could certainly apply this experience to my future.

The biggest struggle for me was probably the fact that the internship was entirely in Japanese. I especially found it difficult in the beginning of the internship, when I was still adjusting to language used in the business environment and when I was being taught scientific concepts. For instance, I had never heard a lot of the vocabulary terms that my supervisor used when he was explaining neural networks to me. Though it was certainly tough for the first couple of days, I was nonetheless able to quickly adjust to communicate more comfortably and effectively through the various meetings and interactions I had with the individuals of my department. It was very rewarding to develop my Japanese in such an environment, as well as ultimately present a thorough presentation of my chosen tool and developed models—the rest of the department fortunately found it very informative and decided to apply the tool and models to other projects that they were also working on.

My time outside of work was also just as rewarding. I got to travel, make new friends, and spend time with my host family. My coworkers also took me out to eat some very good food after work. Another “project” that I had was to train my coworkers in English whenever we were outside of the office—as many of them also wanted to go abroad as well—which was certainly another exciting job for me. Overall, with a better grasp of Japanese, I could more effectively communicate with those around me and better appreciate the experiences that I had this summer as an intern in Ishikawa.



Some of my coworkers and I at a sushi restaurant known for its huge fish