

Canada-Japan Coop Program  
**Experiential Report**

**Advanced Telecommunications Research Institute International**  
2-2-2 Hikaridai, Seika-cho, Sorakugun, Kyoto, 619-0288, Japan  
Intelligent Robotics and Communication Laboratories  
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# Work Experience

## About ATR

Advanced Telecommunications Research Institute International, or ATR, is a private company founded in 1986 to promote research in the fields of telecommunications and information [1]. ATR has many different research laboratories, each with different goals, currently under four main research themes:

- Computational Neuroscience, aiming to understand the inner working of the brain and develop a brain-machine interface to use with information and telecommunication technologies;
- Life-supporting Robots, aiming to support everyday life activities with the use of robots;
- Wireless and Communications, aiming to develop wireless communications' infrastructure and create new radio wave applications;
- Life Science, aiming to understand the biological mechanisms of the human body using a multidisciplinary approach [2].

The ATR office is located in Seika, a small city in the south of Kyoto Prefecture, bordering on Nara Prefecture. It is approximately 30 km away from both Kyoto and Osaka City, and about 10 km away from Nara City.

## My work at ATR

I worked at ATR for one year, from June 1st to May 30th. I worked in the Intelligent Robotics and Communication Laboratories, or IRC, a part of the Life-supporting Robots theme. The lab focuses mostly on the development of smart networked robots to improve the general quality of life and interact with people. I was working in the Human-Robot Interaction department, which as its name implies focused on the interaction between humans and robots.

As a Research Intern, my role was to develop tools to assist in the research and development of robots for public spaces. More specifically, I worked on improving

and adding functionalities to the existing Pedestrian Simulator. This simulator is a tool for researchers to test and see a robot's behavior in a public environment, without having to physically bring the robot outside. The simulator mimics the robot's sensors and inputs and runs them through the programmer's code. It then applies the programmed reaction to the robot in the simulation. The simulated environment contains pedestrians with a variety of behaviors to try and emulate real life pedestrian reactions.

At first, I was assigned with the creation of new pedestrian movements and animations, such as talking and shopping, for the simulator. This allowed me to learn and get familiar with blender and the blender game engine, the software used for the 3D modeling and rendering of the simulation and the simulator's physics engine. I also learned the tools and scripts used to transfer gestures and movements' recordings to the human 3D models used in the simulator.

After that, I was tasked with implementing new pedestrian objectives and actions so that we could simulate the behavior of pedestrians in shops and convenience stores. The existing pedestrian model for the simulator was designed for open spaces, with a lot of room to move on the sides and not many obstacles. I thus had to adapt the existing model to narrow spaces, where pedestrians have less space to move and thus need to avoid each other differently when walking towards each other. I also had to add the shopping behaviors, such as taking items from the shelves, looking around for them and waiting for people to move away before moving in to the same spot.

Finally, I also attended and presented for two events during my work at ATR. I first spoke briefly about my experience and impressions as an international intern during a Keihanna Science City conference on international internships. Then, I attended the ATR Open House 2018 and presented my department's research to interested attendees.

## Work life

The working environment at ATR is definitely enjoyable and fairly loose. Most work policies were more modern and less traditional. For example, the start and end time for work were flexible and listening to music while working was allowed. My department worked in an open space style office, with desks along the walls of a rectangular room and the center space free. The office could seat about 15 people on the long side and 4 on the wide side, but the office was rarely completely filled. Most of the times, about 10 to 15 people were there.

The building had an affordable cafeteria, with good food, which is where I ate lunch usually. There was also plenty of restaurants nearby and a supermarket right in front of the building if you wanted something else.

My coworkers were very friendly and welcoming. We got introduced when I arrived and they showed me how most things worked around the office and the apartment. They helped me with the processes they went through already and offered advice on how to set myself up correctly in Japan. The majority of my coworkers were other foreigners from a variety of place: Croatia, Italia, Spain, France, United Kingdom, Slovakia, Ireland, etc. Initially, there were few other interns with me there, but in fall and winter a lot more interns arrived. We sometimes went out for lunch or dinner and also occasionally went to see events in Osaka or Kyoto.

My supervisor was also very friendly and helpful. He was very knowledgeable on all areas of the project and was almost always available to answer questions. We had meetings weekly to discuss the advancement of the project and the future direction of my work.

## Acquired knowledge and experience

I learned a lot during my internship at ATR. I didn't know much about Linux or how to use it before, and a full year of using only Linux allowed me to become proficient with it. I learned about 3D modeling and rendering and how to use Blender, a popular software for it. I also became aware of complications and challenges that arise when working with a 3D simulation, such as determining the path for many objects, dealing

with collisions and checking the space available around you. In addition, I learned how to deal with large software projects and how to write documentation for future developers to help them.

Other than technical skills, I also acquired broader general knowledge on various subjects. I got to talk with my coworkers about their research and research in general. They talked about their impressions of the field, the work environment and how it is to be a researcher. It helped me get a sense of the career during graduate studies and after. Furthermore, I worked in a team with very diverse background and experiences, which improved my interpersonal skills.

Overall, I believe this internship contributed substantially to my academic and career development. Adding to the knowledge and skills, I made connections with various researchers in robotics and artificial intelligence, fields in which I intend to work in. I experienced working and living abroad, and since I intend on doing it again in the future this will be very valuable. I also might try working in Japan again, so this experience will be beneficial when applying. Additionally, this research experience helped me get a feel for graduate studies, which I intend on pursuing after my bachelor.

## Living arrangements

My apartment was found and furnished by ATR, so I did not have to search for one. It wasn't a company dormitory, but some other researchers and interns lived in the same building and area. It was my first time staying in apartment for an extended period of time, so it was an interesting experience, especially in an entirely different country.

I lived alone in my apartment, which was furnished with everything needed. I had a small kitchen with a stove, a microwave and a fish cooker, although it lacked some counter space, with only a rather small area. I had a separated bathroom with a fairly spacious bath and shower area. I had a separated Japanese style living room, with Japanese sliding doors and tatami mats. I slept on a somewhat thin futon on the tatamis, which definitely took some time to get used to, but wasn't so bad in the end.

Finally, the apartment had an air conditioner, allowing me to survive the very hot summer and slightly cold winter.

The area where I lived, while a bit far from my work place, was well situated. There were two shopping malls and three convenience stores within a 10 minutes walking distance. In addition, the train and bus station was about 7 minutes away. Unfortunately though, it took 30 to 45 minutes to commute to and from work by train and bus, or 40 to 50 minutes to commute on foot. Since walking wasn't much slower, on days where the temperature was milder, I sometimes walked to work. The scenery was surprisingly nice, with a lot of trees, fields and some more traditional Japanese houses on the way there.

## Travels and cultural experiences

I took the chance while in Japan to travel around a bit. I didn't travel as frequently as I could've, but I went to various locations I wanted to go to, sometimes alone and sometimes with other interns or coworkers.

In general, travelling was rather easy but slightly expensive. Trains and buses can go pretty much everywhere, and for longer distances shinkansens and night buses could get you there without much wasted time. I usually favored night buses since they were much cheaper, and while they're not particularly uncomfortable, they can be hard to sleep in if you're taller than average.

At first, since I was in the middle of the Kansai area, I travelled to Nara, Osaka and Kyoto a lot during the weekends for day trips and came back to sleep in my apartment. I particularly enjoyed the nature side of those trips. I really liked the gardens, with the greenery and the koi fishes in the ponds. I found them very soothing, especially when going early with almost no other visitors. I also enjoyed the Osaka Kaiyukan Aquarium. I'm usually not a fan of zoos or aquariums, but for some reason I really enjoyed this visit.

I also went to Tokyo twice during my stay, to visit the city and to attend events, but due to the distance I didn't really get to explore the Kanto region much.



Isuien, a garden in Nara, photo taken by me



A ray in the Osaka Kaiyukan Aquarium, photo taken by me

My favorite trip was an unexpected one to me. I had not heard anything of Mount Koya before coming to Japan, but it turned out fantastic. It is a central location to Shingon Buddhism and as such is filled with huge temples everywhere. There are numerous hiking routes all around the mountains and it's also possible to stay overnight with the monks, something I sadly did not do as I was visiting on a Sunday. I hiked a trail after visiting, and it really stuck with me as a highlight of my time in Japan.



Coins balanced on their side in a temple on Mount Koya, photo taken by me



View from a hiking trail on Mount Koya, photo taken by me

Finally, I also got the chance to see the cherry blossoms in Japan. It was one of the things I really looked forward to. I travelled to a lot of beautiful cherry blossom spots during that time. I went to Hiroshima and Miyajima for one weekend during the blooming time, seeing the Peace Memorial Park with the blooming cherry trees. I went to Himeji and Himeji Castle, with plenty of sakura all around the castle and castle grounds. With some friends and coworkers, we hiked Mount Yoshino when it was blooming, even though it was a bit rainy. In addition to all that, I took some time to see the most popular viewing locations in Kyoto and Osaka. It was a very eventful period for me.



Himeji Castle during cherry blossom season, photo taken by me

## Recommendations to future students

Everybody will have a different experience in Japan. Some people want to go hiking, others prefer shopping around in the city, others even go to card game tournaments! I think the most important thing is to figure out your own thing. Plan out the major places you want to go to, and around what time you'd like to go there. Then, fill out the rest with whatever you want. This way, you'll be sure to not miss out on your most important stuff.

The 'fear of missing out' is also something to be aware of. In our CJCP chat group, there were a lot of events being posted and there was always something happening everywhere. Especially in the summer, there are festivals and fireworks everywhere, and it's impossible to see them all. I think it's important to be aware of this and to learn to 'let go' a bit. Just remember and stick to your main plan, and consider the rest as bonus visits instead of seeing everything as missed opportunities.

Finally, don't be afraid to try things out once in a while! I got a lot of great experiences (and some not so great, but definitely less of them) by doing things on a whim. You're in Japan, it's probably the best time of your life to try things out, and you'll definitely regret in 10 times more if you don't do it, than if you do it and it turns out bad.

## Overall impression

I had an amazing year in Japan, where I met wonderful people from all around the world (and of course from Japan). I applied for the program almost on whim, last minute, telling myself that I should at least try, and it was probably one of the best decisions of my life. It gave me an extraordinary experience living abroad, and I had a lot of fun while working there. I think I grew personally a lot during this internship, as it gave me a lot of experience in my field of interest and also in personal living experience. I would absolutely recommend doing the CJCP Program to anyone interested in Japan or anyone interested in doing an internship abroad.

## References

- [1] Advanced Telecommunications Research Institute International, "Greeting", 2019. [Online]. Available: [https://www.atr.jp/about/greeting\\_e.html](https://www.atr.jp/about/greeting_e.html). [Accessed May 31, 2019].
- [2] Advanced Telecommunications Research Institute International, "Research and Development", 2012. [Online]. Available: [https://www.atr.jp/research/research\\_info\\_e.html](https://www.atr.jp/research/research_info_e.html). [Accessed May 31, 2019].