

Experience Report

Home university: University of Waterloo

Program: Electrical Engineering

Institute at KIT: Chair of Dependable Nano Computing (CDNC)

Period of stay: September, 2019 -- April, 2020

Self-introduction

I am an international student from the University of Waterloo, Canada. Before I came to Germany, I just finished my second year undergraduate study in Electrical Engineering. I really appreciate the chance to do my internship with KIT, which not only gives me more practical experience in my academic field but also exposes myself into a different culture.

Adapting to the new environment

I want to thank the Christian Bürkert Stiftung for supporting me at my work term. This experience is challenging but there are numerous people giving me countless help the whole time of my stay.

There are several students from the MINTernship program and we can always find someone to help us out. We have two student mentors, Lisa and Fanzi, to help us get familiar with the new environment and answer all our questions. When I first arrived in Germany, Lisa helped us with all the administrative things. Few weeks later, Fanzi invited us for dinner in a typical German restaurant. She also organized other events with us and sent us activities we could participate in Karlsruhe.

Near the end of our stay, we faced an unprecedented situation when the COVID-19 outbreak in Germany. The program's coordinator respected the decision we made. We could choose to end the internship earlier if we felt safer to do so. Since I decided to stay until the end of the internship, they tried to help me with my visa, accommodation and de-registration process, which helped me smoothly complete my internship without any difficulties.

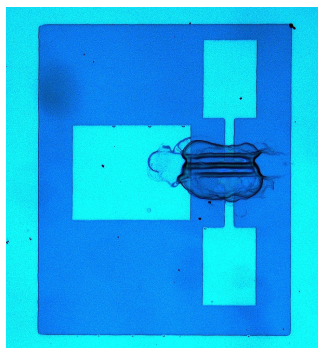
Besides all the support I got, I felt like learning German would be a great way to understand and adapt to this new culture. Therefore, I participated in a beginner A1-level German course held by KIT. It was hard to imagine at first how beneficial it was. Since everything I saw, except at my workplace, was in German and people would talk to me in German in all public locations, there were so many chances for me to practice. With more practice, I progressed much faster and became more confident about this new language. I also met a lot of other international students in class who came to Germany not for a long time. Some of them became my friends and we still have connections.

Working at CDNC

I worked at CDNC during my stay at KIT. I would like to thank the support provided by my supervisor, Ahmet Turan Erozan, the professor, Dr. Mehdi Tahoori, and the other staff at CDNC. They assisted and supported me throughout the whole time.

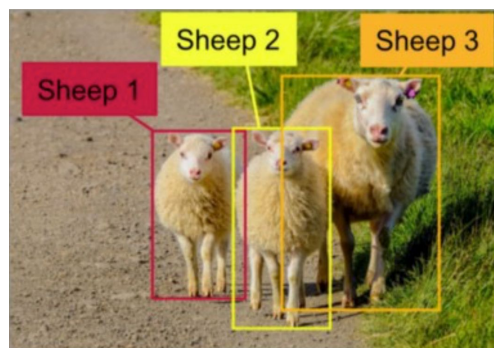
I got to know so many interesting topics, including printed electronics, IC camouflaging, machine learning, deep learning and computer vision. It is really exciting to see how the lecture knowledge can be applied in more practical situations.

My work can be divided into two parts. In the first part, I worked on a project taking the advantages of printed transistors developed in this group. Different circuit functionalities can share almost the same layout, which is a promising solution for protecting semiconductor intellectual property. I did the circuit design, simulation and data collection for this project. In the second part of my work, I researched about object localization problems by applying deep neural networks. This project is really hard for me because of the limited experience and knowledge. However, I still achieved some progress and this interesting topic makes me want to keep learning and looking into it.



a)

a) Layout view of one transistor, three different states(transistor, open circuit, short circuit) share very similar layout



b)

b) Example of object localization problem

It was my first time working in a university setting, so the work was challenging but it was overall rewarding. This experience gave me more insight about the area of scientific research. Unlike working in a company setting, the work can be new and exciting in the first few weeks. However, it might become repetitive later. Working here enabled me to get in touch with all kinds of tasks in different areas. I could take more initiative and have the chance to explore.

Living in Karlsruhe

I lived at one of the student residences called Familienwohnheim, which is a 7-person apartment. It's a great way to make connections with the roommates. We sometimes cooked or watched movies together.

The location of this residence is so great. It only takes a 2-minute-walk to its nearest tram station. From the tram station, I can easily go to the city centre or the Karlsruhe main train station in less than 10 minutes.

Karlsruhe is not a big city, but I find it extremely comfortable for living. I can easily find places to do exercises both indoor and outdoor here. There are so many running or walking trails. I really enjoy having a run or riding my bike through these areas. I also got a membership at the university gym. The gym is small, but it only provides service for KIT students or employees. It is relatively cheap and there are always times when it is not crowded.

There is one street in the city centre full of restaurants, shopping malls and other stores. I tried lots of restaurants with my friends and we found great Italian and Chinese food there. There is also a bookstore, which has some books written in English. I really enjoy reading in its cafes on weekends.



Pictures taken when running

Travelling within Europe

Before this internship, I had never been to Europe. Everything I knew about Europe was from movies and books. I felt so lucky that I could see all these views in reality this time. Travelling in Europe is really convenient with so many public transportation options. I most often chose DB which is really comfortable to take and I can see the views all the way to my destination. I also once took the Flixbus which is a much cheaper option. Following are the places I went during my stay.

Vienna, Austria & Budapest, Hungary

My mom came to visit me when I first arrived in Germany. We are big fans of classical music. Therefore, Vienna became our best place to go. We enjoyed a concert at Vienna Golden Hall and explored a lot more about this city. We also went to Budapest since it took only 2 hours by bus from Vienna to reach there.

Frankfurt, Germany

When my mom left Germany, we had a short trip in Frankfurt. We saw both traditional and modern views in this city.

Munich, Germany

I went to Munich with my friend during the Oktoberfest time. It was a great way to experience Bavarian culture and immerse ourselves into the carnival atmosphere.



Top view inside the carnival

Stuttgart, Germany

I met one of my primary school classmates here. This city is busier and larger than Karlsruhe, so we did a lot of shopping here.

Feldburg in Black Forest, Germany

My friend and I chose a hiking route online and climbed the highest mountain in Baden-Württemberg -- Feldberg. There were also so many surprising and stunning scenes throughout this trip.



Hiking experience in Feldberg