Travel Report for attending COINS PhD seminar and NIKT Conference -2019 (Narvik)

This year the annual COINS PhD student seminar which held in Narvik, was coincident with NIKT conference and this made a great opportunity for us to meet many more people. The COINS seminar started with an interesting introduction about Narvik, its role to export the iron ore and the history of the railway in Norway by Hanno Langweg.

First Part:

The first talk was presented by Seraj Fayyad, one of the graduated COINS students who currently works at Princess Sumaya University for Technology. Seraj shared what he had learned through his PhD and the processes as follows:

- Read a lot and write in a good way to present it.
- Know about others. Join groups or organizations like COINS to know what is happening around you, not just what you are doing!
- Get in touch with your supervisors.
- You will be criticized by lots of people, prepare yourself for this.

Then he briefly expressed the importance of IoT and vitality of security in this field. Indeed, by 2020, we will have more than 20 billion connected devices in different sectors such as industry, railway, healthcare and, etc. But, not all IoT devices have enough capacity to support traditional IT\ICT security solutions such as encryption. Besides, in the heterogeneous distributed networks like IoT, applying traditional security strategy will affect the availability of the services. Thus, these new challenges raised by IoT require urgent consideration. To address the aforementioned issue, Seraj worked on IoT risk management during his PhD to manage and control the specific security challenges in this ecosystem. Regarding this, I asked him these questions:

Q1: How did you reach to your framework and final answer?
A1: You need to highlight your contribution and then go step by step, you also need to keep the coherence between your papers.

Q2: How did you apply risk management in IoT?
A2: I studied the related papers and found out there is no comprehensive view of this field, so during my PhD, I tried to address this issue from a general perspective.

Q3: It seems that these days, we just follow a loop. In case we encounter to new a technology we just try to apply available methods to the new field. Is it a proper method? Does it really work?
A3: It is all we can do, find something and try to improve it a bit and yes, it will be valuable!

Then several PhD students presented the result of their study, which most of them were my colleagues in NTNU, Gjøvik. But surprisingly, it was the first time that we had the chance to discuss our project and research topics in more details.

1- Ahmed Walid Amro discussed the security requirements for the maritime autonomous surface ship in future as a new kind of transportation system. He explained the need for transporting passengers via autonomous ships as a part of a project in Trondheim and the research methodology that he will follow to address the challenges he briefly mentioned.

2- Livinus Obiora Nweke presented his paper in which he used the Markov chain to analyze and model the Software-Defined Networks (SDNs) regarding Queueing Networks. His research aimed to protect the SDN from attackers by monitoring the network traffic.

Q1: You used a qualitative method based on the Markov chain which is based on the probability. How do you ensure that you can identify a real attack? How did you (probably) define a threshold for your system?
A1: Information security is based on the probability and there is no certainty that an attack will occur. What we do is to identify the threats an attacker could exploit them, and the related outcomes if he does that.

Q2: How did you find the proper features and characteristic of your system to study the system behaviour?
A2: When you are doing an analysis, you have to decide which level of abstraction you are interested in. Because in this manner, you will delete the unimportant details so you can utilize what is important for you.

3- Muhammad Ali Fauzi presented his PhD proposal entitled "Modelling Healthcare Staffs' Mental State to Minimize Cybersecurity Risk". The stressful condition of healthcare systems affects the personals which usually lead to human errors. So, his PhD goal is to model the mental state of the healthcare members to reduce these errors. Moreover, by applying Federated Learning he attempts to preserve the privacy as well.

Q: What is the difference between Differential Privacy and Federated Learning as they are both utilized for privacy-preserving?
A: He was not sure; hopefully we will find the answer soon.

4- Prosper Yeng presentation also was related to the healthcare sector in particular in Norway and revealed the importance of medical data privacy and health care security. He argued the vital impact of having a comprehensive approach to address the vulnerabilities that might be exploited by adversaries.

5- Muhammad Mudassar Yamin discussed the result of his security experiment conducted on different four groups during the last months. He expressed how and why ones can utilize games and emulators to model cyber-attacks and defence scenarios.

Second Part:

The second part of the seminar concentrated on life after PhD and provided valuable information about how to improve the opportunity of finding a job in academia or industry.

Oleksandr Kazymyrov started his talk by comparing his PhD defence in both Norway and Ukraine. His main job was to conduct penetration testing at the security department for different vendors. Oleksandr mentioned that even if you have a university degree, you need to have special certificates to be known as a valid person to do this task. He also shared his work experience at EVRY, and the challenges he faced up to now.

Q: How do you deal with vulnerability management?
A: Vulnerability management is important but patch management is more important and you should do this after you find vulnerabilities

Then, Andrii Shalaginov had a speech about collaboration, networking and funding opportunities during and after the PhD. He provided a great collection of all organizations and institutes that support researchers and provide funding for doing research. Moreover, all the opportunities that PhD students, in particular, those who study in Norway, can take advantages of them to broaden their networking and collaborations.

The last speaker, Berglind Fjola Smaradottir, not only shared her PhD experience but also told us the secrets of becoming a well-known researcher from an ordinary PhD student. Currently, she is leading her research project and is a member of several different projects. She emphasized on the importance of meeting new people and collaboration with researchers from different universities or even different departments.

Q: If you find something during your study and feel it is useful to apply it in other domains, in this case, will you follow this and find a proper person (from a different department) for collaboration?
A: Yes, why not. Because it maybe helps you to be a better researcher, so be open to new things. But be careful that during your PhD, you have limited time.