A Foreign Researcher's Career Path in Japan

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1. Overview

Born and raised in Nepal, I have been living in Japan for fifteen years. I spent the first three years as a PhD student, and the latter twelve years as a researcher of communication networks at the National Institute of Information and Communications Technology (NICT), Tokyo. I have been enjoying my professional life, not to mention, social and family life as well. Before I describe about my profession, I like to mention about my background related with Japan. A previous version of this article was published in the IEICE Communication Society B-plus magazine in Japanese [1].

2. Affection with Japan

I had heard of and felt Japan in my early childhood. I had heard of it as a country of rising sun, proper discipline, and perfect time management. I had felt it as the manufacturing country of then popular brand of National Panasonic transistor radios and Seiko 5 watches, which were highly praised at my home and neighborhoods.

Since then, an interest to visit Japan to see and feel it more was deeply rooted in my mind. After graduating from high school and coming to the capital city of Kathmandu, I could see Japanese tourists walking in the streets surrounding popular monuments, usually in well-disciplined groups guided by tour guides. My enthusiasm to explore further about Japan went on expanding. In my undergraduate course, when I came to know that the popular rooftop terrestrial television antenna (commonly known as Yagi-Uda antenna) was invented by Prof. Shintaro Uda and Prof. Hidetsugu Yagi of Tohoku University, my curiosity to know more about Japanese university education and research started escalating.

While I was studying master's degree course in Seoul National University, Republic of Korea, a Japanese professor from National Institute of Informatics (NII) visited our lab. He gave a presentation on his institute's and lab's research on various fields of information and communication technologies, such as artificial intelligence, robotics, spoken language processing, multimedia processing and communication, mobile and optical networking, and computer graphics. He also talked about various scholarship programs available for competent PhD students at NII, which was hosting the Informatics Department of the Graduate University for Advanced Studies (also known as Sokendai). Based on his information, I applied for admission to the PhD program. Consequently, I came to Japan to start a new phase of my life.

3. Student Life in Japan

My real experience with Japan began at NII, where I found a very friendly and enjoyable environment for foreign graduate students and researchers. The language of communication was English, that is, all courses were offered in English, and regular research meetings and seminars were also conducted in English. Moreover, there were weekly Japanese language classes for foreign students where I started learning from the Japanese alphabets (Hiragana and Katakana) and could attain a proficiency level of basic conversion within a few months. NII provided a peculiar type of graduate school environment where professors and postdocs doing research on cutting-edge technologies outnumber the graduate students studying for their PhD degree. All students had their desks in the same big room, each getting a small private space separated from one another by a partition. So, each day we had plenty of opportunity to have friendly interaction with many professors, visiting researchers and fellow graduate students, not only related with our own research areas, but also with multi-disciplinary topics. I studied three years to fulfill all the requirements of course work, paper publications, and thesis writing, and obtained the PhD degree in Informatics.

4. Involvement with IEICE

I was introduced to the activities of the Institute of Electronics, Information and Communications Engineers (IEICE) and motivated to get involved in it as a student member by my supervisors Prof. Shigeki Yamada and Prof. Eiji Kamioka at NII. I became a student member of IEICE Communication Society within the first semester of my study. I made the first presentation of my research work in a meeting of Technical Committee on Mobile Multimedia Communication (MoMuc) in Kyoto when I was in the second semester of my study. Since then I have been actively involved in IEICE by presenting papers time to time in various technical committee meetings (Kenkyukai). Recently I have finished five years of volunteer service as a member of the editorial board of IEICE Transactions on Communication (English) and a member of the Technical Committee on Information Networks (IN). I am joining another technical committee soon.

5. Professional Life in Japan

After completing my PhD, I joined the National Institute of Information and Communications Technology (NICT) as a postdoc researcher (official known as Expert Researcher) to do research on the New Generation Network. The well-known project,

Fig. 1 Paper presentation at a conference

named AKARI Architecture Design Project, had just started at NICT during that time, which was leaded by Prof. Tomonori Aoyama (University of Tokyo). The project members included researchers of NICT and professors of various universities such as the University of Tokyo, Keio University, Osaka University, and Tokyo Institute of Technology. The project, managed initially by late Dr. Masaki Hirabaru and later by Dr. Hiroaki Harai, aimed at the clean-slate design of New Generation Network architecture and technologies. The project covered various topics, such as new numbering and addressing schemes, ID/locator split-based architecture, network virtualization, security-by-design, and optical path/packet integration. I was responsible for the research on ID/locator split-based network architecture. Consequently, I designed a new architecture, called HIMALIS (Heterogeneity Inclusion and Mobility Adaptation through Locator ID Separation) and related protocols. The major objectives of this new network architecture were as follows: (1) to incorporate heterogeneous types of user terminals or end devices, such as computers, phones, sensors, and actuators, to use heterogeneous types of network protocols suitable for their capability; (2) to support mobility natively from the network layer; (3) to provide in-built security mechanisms for network access control, authentication, and data plane security. I presented and published several papers on this research in conferences (one example shown in Fig. 1), journals and standards development organizations. The mechanism for enabling seamless communication among devices connected to heterogeneous networks, and the mechanism for generating identifiers of devices from their hostnames, storing the mapping between the identifiers and locators of devices as records in a name resolution system, and providing the mapping records to querying devices in very low latency have been standardized in ITU-T Study Group 13 and demonstrated at the ITU Telecom World 2015 held in Budapest, Hungary (Fig. 2).

Fig. 2 Research outcome exhibition at ITU Telecom World 2015 in Budapest, Hungary

After few years of joining NICT, I became a permanent researcher through an open competition. Currently, I am a research manager, and engaged in R&D of network automation technologies that would enable us to create and control virtual networks on-demand according to the diverse quality of service requirements of IoT application services. Concurrently, I am working as a visiting associate professor at the University of Electro-Communications where I am engaged in supervising graduate students on their research on latest networking technologies. I am also volunteering as a Rapporteur in ITU-T Study Group 13 to develop standards of emerging network technologies, such as information-centric networking (ICN) and ID-based communication for future networks.

6. Conclusion and Take-away Message

In conclusion, I would like to write about my experience to become a successful ICT researcher in Japan. Although I do not claim that I am an exemplarily successful researcher in Japan, but it is sure that I am enjoying both the research and teaching works here. In my experience, we need to possess a few key capabilities to build our successful research carrier in Japan. The first capability is that you should be able to develop highly professional and cordial relation with our supervisors and professors. Japanese society believes in group trust and collective efforts, rather than in individual or isolated efforts. Therefore, a trustworthy recommendation from your professor or supervisor is the essential requirement to get a good job or timely promotion. The second capability is that you should be able to select and pursue research on futuristic topics that would be integral part of some new technology, which would be highly demanded by the society within a few years. This would help you in justifying the importance of your research as well as your existence in your organization. The third capability is that you are eager to acquire up-to-date knowledge about multidisciplinary subjects related with your research. You are open-minded and capable to explore various approaches to timely addressing research problems. The fourth capability is that you are an outgoing person and eager to contribute to various professional societies and regularly participate in their activities. This will help you remain aware of the latest research being pursued by your peers, as well as disseminate your research outcome to the society. At last, I would like to share with you a statement that my supervisor (Prof. Yanghee Choi) in Seoul National University used to say, “A successful researcher requires to appropriately balancing time in three tasks – research/teaching, presentation, and professional networking”.

7. Reference

[1] Ved P. Kafle, “Let’s learn from international students! The way of a foreign researcher in Japan,” IEICE Commun. Society Mag. B-plus, No. 42, pp.136-137, Autumn 2017 (in Japanese only).