International Space University

Space Study Program 2014

Activity report

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Introduction

From June 7th to August 8th in 2014, I attended the Space Study Program (SSP14) held by the International Space University. It was a valuable and memorable 9 week's experience.
Here I report what I've done at SSP14.

Core Lectures

What is it?:

At first 6 weeks of the SSP14, I've learnt about all subjects related to space development; space science, space application, space engineering, space business, space law, space medicine, and humanity, and also the connectivity of those subjects.

What I expected:

- Learn wide perspective to understand space program
  - I have learned only space engineering and a little bit of space science in school, so my goal was to learn new aspect of space program to enrich my idea and to use these knowledge in the following Team Projects.

What I learned:

- Understand that so many topics are related to space development, and interactions between those topics are also important in order to understand space program.

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  - **Space Science**: Not only astronomy or astrobiology as my first impression, this subject contains environmental science that may cause serious damage to space craft, like Galactic Cosmic Rays, magnetosphere, atmospheric drag, and debris. So, it's significantly important to research space science to develop space craft and mission design.
  - **Space law**: Thinking about space activity like Active Debris Removal, There is a need to carefully think about space law, since there's no concrete rule about Active Debris Removal today. Space craft may contain confidential information of state, so It's hard to touch those space craft without permission or public understanding. Technology issue has been discussed a lot about the debris removal, but also there is a need to have a legal point of view to discuss about the space debris removal program.

Department Activities

What is it?:

In the middle of the SSP14, for about 2 weeks, I had a Department Activities. I chose one subject from the Core Lectures and deepen its knowledge through hands-on activities.

The Department Activities is composed of 2 topics; facility visit and mini project. I chose "Space Application" to learn about how the space craft should be used and what those possibilities are.

What I expected:

- See the reality of space application industry
- See how space application works and how it contribute to society

What I learned:

Through facility visit,

- See real workplace of all procedure from maker to user of space application
  - MDA, NEPTEC (Manufacture): experiment facility(Oscillation test, Vibration test, Space chamber...)
  - Telesat, Canadian Space Agency, Canadian Meteorological Center, National Research Council (Operation and Use): mission control, and presentation about how to use satellite information.
  - It was a valuable experience to visit all these places and to understand how it actually works.

Through mini project

- CubeSat can also be an useful tool of space application

  I carried out a small research about space application with a member from Bangladesh.
  - Our research title is "An Asian CubeSat constellation: A low cost solution for early disaster prediction and monitoring". I discussed about the feasibility of CubeSat for monitoring natural disaster.
  - Relatively much less expensive satellite system can be one of the solutions for developing countries.
  - Constellation system can also be a useful tool to strengthen the connection among neighboring countries.

Team Projects

What is it?:

Through all 9 weeks(mainly for the last 2 weeks), I had a Team Projects. In the Team Projects we launched a space program with 30 people from all over the world. Our team topic was "AMOOS": Autonomous Mission for On Orbit Servicing. Facing the space debris issue, we tried to offer multi aspects approach including all topics we learned in the Core Lectures.

What I expected:

- Learn interdisciplinary point of view about space program through the team projects.
- Learn Discussion skill, team management skill in the international team.

What I learned:

- Communication among team members is significantly important to proceed with the interdisciplinary project.
  - All members have their own role in the team. To connect their works and information, much discussion was needed. I had many small/large size of meetings to share and organize our ideas. Besides, most importantly, everyone needed to have the same images of the team's goal. We discussed again and again about our goal, and then we decided an approach to the solution.
- It's really important to know cultural differences in the international team
  - The cultures of the discussion rule and the organization vary depending on countries. At first we carried out a brainstorming about the discussion rule and the team structure. In the end we could have a comfortable team structure that everyone(non-native speaker like me) can contribute and join the discussion. Sharing everyone's idea based on their culture and trying to find out better solution is really important.

Conclusion

SSP14 was a dense, informative, valuable project so that I still can't believe that it was only 9 weeks. I've leant so many important ideas about the space sector. Additionally, not only the above 3 programs, I also had many chances to interact with participants. Connection with people who involve the space sector from all over the world will be precious in the future. This great experience and connection will be definitely helpful for my future career. I'd love to work as a part of the space sector with this many valuable knowledge and experiences I've learned from this program.

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