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Final Report for the short-stay study abroad program

School and Dept.	The School of Multidisciplinary Sciences. dept. Informatics
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Destination country	China
Receiving univ./institute	Microsoft Research Asia. Visual Computing group.
Period of study	11/04/2011 ~ 07/08/2011
Date of report	05/09/2011

2. Description of the receiving institute.

Microsoft Research Asia (MSRA) is the research center of Microsoft in Asia, located at the center of the business district of Beijing. It is a high quality research center with excellent researchers that we often meet in top conferences. Though being part of a private company, I was amazed by the freedom of researchers at MSRA. Most likely to academic research, the main goal of researchers and students at MSRA is to achieve good contribution to the research community, by publishing papers in top conferences. Most research done there does not aim at becoming the next MS product. Working in MSRA is an extraordinary opportunity to discuss and do research with excellent researchers.

3. Preparation before leaving Japan.

I started my internship at MSRA one year before the end of my Phd. It was a good opportunity to participate in a new project that would increase the contribution and impact of my thesis. After coming back to Japan, I have now new material to include in my thesis as well as possible publication in near future that will help me complete my doctoral course. I learned about the study abroad program from my advisor here in NII, when I was searching for financial support. Since MSRA welcomes many international students and researchers my current level in English was sufficient. My advisor at MSRA was Prof. Matsushita. After he accepted me as intern, Microsoft helped me obtaining a visa, the application for the visa thus went smoothly.

4. Study and/or research during the stay.

During my stay at MSRA, I developed a new simple and flexible, yet effective 3D reconstruction method from a sequence of depth images using recent advances in convex optimization. A Kinect-like sensor, with known intrinsic parameters, is used to acquire a sequence of depth images from multiple viewpoints. All extrinsic parameters (6 for each viewpoint) then have to be estimated to recover the full 3D model of the scanned scene. The recent breakthroughs in convex optimization that enable robust recovery of a high-dimensional low-rank matrix despite gross sparse errors have a wide range of applications in computer vision. In particular,

it is of great interest to use such a strategy for 3D reconstruction since it becomes possible to efficiently model occlusions and data noise, which are most challenging problems that arise when aligning 3D scans viewed from different viewpoints.

5. Activity other than study or research during the stay.

Other than studying or working on my project at MSRA, I had many opportunities to visit Beijing and its surroundings, and make new friends. Beijing is the capital of China since long time and many amazing cultural heritage is open for sightseeing. Moreover, from Beijing, it is easy to go see the great wall or other interesting cities like Tianjin. With the many interns at MSRA, I had many opportunities to meet new people and make tons of friends from all over the world.

6. Expenses.

Travel expenses :

- 1st Round trip (11/04/2011 to 07/08/2011) airfare : 144,920 yens
- 2nd Round trip (5/6/2011 to 12/6/2011) airfare: 120,000 yens
- Health insurance: 50,000 yens

Living expense :

- Accommodation : 30,000 yens per month
- Food and other: 30,000 yens per month

Incomes / Grant:

- Study abroad program: 200,000 yens
 - Microsoft: salary -> 53,000 yens per month
- 2nd Round trip refund.

7. Language at the receiving institute.

At MSRA, English was required for research, but Chinese (Mandarin) was used for living. Beginner level in Mandarin is sufficient for living in Beijing (MSRA proposes free class of Mandarin). As for English level, score 800 of TOEIC was enough.

8. Things you find difficult.

Though low level in Mandarin was enough for living in Beijing, I found difficult to communicate with other people outside MSRA, it is also not easy to travel outside Beijing alone if you do not speak well mandarin.

9. Advice for future applicants.

A short-stay abroad for study is a great experience. Time pass very quickly, so do not wait too long before discovering the country and its culture.