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研鑽タイトル　Research Title

Towards Healthy Architecture

研修概要 Research outline

My research topic encompasses subjects related to the "Quality of indoor environments and occupants' comfort and health." My interest lays both in physiological and psychological responses of occupants in indoor environments and as a result, my main concentration is researching non-intrusive techniques of in-situ evaluation. People spend 90% of the time in indoor environments, and as such, they are exposed to different environments which affect our health in different ways. **Making sure that our indoor environments provide health for us, is our primary duty as architects.** Through this research abroad, I have had chance to meet worlds renowned architects and neuroscientists, as well as got to experience first-hand lectures from Neuroscientists of Salk Institute in USA, University of Waterloo, UC San Diego etc. Moreover, my topic of research has a necessity for a multidisciplinary approach, so an opportunity to be in an multidisciplinary environment has helped me understand the advantages and disadvantages of this approach. My future plans lay on collaborative research in order to come to a new design guideline for building which will provide us with new possibilities of creating healthy architecture based on **medical examination and results.**

研修先について About the laboratory visited

My visit focus was mainly in activities organized by educational institutions that provide opportunity to learn more about this interdisciplinary topic. After my search on programs around the world, I have found two related programs in America:

1. New School of Architecture in San Diego organized for the second time - a summer intersession program, that invited together neuroscientists and architects to discuss together the co-relation between these two fields. The workshop was organized through lectures, round table discussions, field studies and study visits. Attendees counted 30 (participants included: 23 America, 1 Japan, 1 Korea, 2 Brasil, 1 Mexico, 1 Qatar, 1 Australia) including licensed architects, professors, nurses and doctors were introduced to the basic information on how brain works in relation to the built environment. Activities have started with with **lectures** (both from neuroscientist and architects), **discussions** focused mainly in the collaborative approach of these fields – advantages and disadvantages, and the future of this joint effort, **workshops** which aimed to get us introduced to the latest devices on market and their use, **field studies** with the aim of applying the knowledge gained from the workshops as well as conduct psychological analysis. Participants were given certificates upon conclusion of the program.
2. Columbia University – Cloud Lab is one of the best examples of combination of practice and theory of neuro-architecture. The lab started their first experiments focused on urban scale in 2012, advancing in collaboration with bio-medical startup OpenBCI through self 3D printing EEG devices that empower researches all over the world to incorporate neural feedback and monitoring their projects. Cloud Lab has organized a workshop in Seoul Biennale of Architecture in 2017 which have included the use of neuro-devices in analyzing the effect that built environment has in our brain. The research in New York was self-funded and organized through **discussions** and **field studies**. Discussions have been focused on 3D printing related to neurological devices, urban studies versus indoor environments, research methodologies and software usage for statistical data analysis. My field studies have been focused on DUMBO Brooklyn, a research area used by Columbia University Cloud Lab, which intersects Brooklyn Bridge with Downtown Brooklyn. The field studies aimed to expand this research through in-situ analysis and evaluation.

研修内容 What you learned

The chance to spend a period of research abroad has given me the opportunity to understand better this complex topic of research, has introduced me to the new ideas and possibilities such as further understanding on Neuroscience through meeting renowned neuroscientists and architects.

- I have been introduced to the new methods of creating devices for brainwave evaluation which are self 3D printed devices called OpenBCI, implementation of algorithms and creation of user interfaces.
- I have been introduced to topics related to neuroscience, and got to understand in more detail the interrelation between neuroscience and architecture. I had a good opportunity to see how people that have already worked in this matter have found ways to accommodate these two fields into practice.
- The biggest reward of this research abroad was meeting new professionals, which could possibly be a potential for future collaborations, as well as understanding that the most crucial part towards a successful research of such kind is having a strong teamwork force.

研修先で特に印象に残ったこと The most impressive thing

Having the chance to be surrounded by people with the same interest in research has been a very unique opportunity for me. One of the most impressive things during the research time in US was observing the confrontation between two fields as different as they could be, Neurology and Architecture, but with a tremendous potential for a future combined practice. I have also understood the importance of the teamwork, and the advantage of achieving multidisciplinary collaborations, and put into practice knowledge from different fields. In a social aspect, I consider that US educational approach gives a lot a space about discussing different matters and ideas, as well as creates platforms in order to implement those.

Neuroscience should be considered as a crucial collaborative field in the design and planning process, so that the future of architecture will become evidence-based, and healthy indoor environments can be evaluated and put into practice.


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