

Flexibility, Endurability, and Peace

TAOYAKA Newsletter



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TAOYAKA

Vol. 5 Summer 2016



Onsite training at Gujarat Institute of Disaster Management, India

Welcome to TAOYAKA Program!

Opening Ceremony: April 06, 2016

By **Toshiaki Kondo, Ph.D.**, Specially Appointed Associate Professor,
Graduate School for International Development and Cooperation



Prof. Makoto Miyatani,
Program Director of TAOYAKA Program

The fifth opening ceremony of the TAOYAKA Program was held on 6 April 2016, and the program welcomed 11 new students for the

April 2016 Admission and 2 students for the Transfer Admission into the third year, 2016. The students are from Japan, Italy, India, China, the U.S.A., Bangladesh, and Vietnam (for details, please refer to pages 2-10).

At the opening ceremony, the Program Director of TAOYAKA Program Makoto Miyatani (Executive and Vice President of Hiroshima University) warmly greeted and encouraged the new students:

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“From now, I expect all of you to study hard in order to be a global leader and work globally. You will get the full support of our university so that you can devote yourself to studies. You will be working on various issues and learning together not only with students from Hiroshima University but also leading graduate schools from other universities. I hope that the global leaders from this program will successfully complete the courses and play an active role in the international arena, to stand up against adversity and lead the way toward safer future.”



The 13 new students aim to become global leaders in promoting the creation of regional societies for coexistence by collaboratively working

with other fields of studies through the TAOYAKA Program.



Introduction of New Students:

Cultural Creation Course

Rie Usui (D1: Graduate School of Integrated Arts and Sciences, division of Integrated Arts and Sciences)

★Transfer Student into the 3rd Year of the Program

From: Japan



I am Rie Usui from Japan and I spent most of my childhood years in Hiroshima. Following my high school education, I studied in the United States and obtained my Bachelor of Science in Evolution and Ecology as well as Anthropology from The Ohio State University. Subsequently, I received my Master of Science in Primate Behavior and Ecology from Central Washington University. For my

master's thesis, I conducted fieldwork at Mt. Huangshan in Anhui province, China, where tourism was thriving owing to the presence of a group of wild monkeys. In particular, my research focused on the role of park rangers in managing monkeys and tourists. This experience inspired me to comprehend further human and non-human animal (NHA) relationships in different spatial, cultural, and temporal contexts.

Because my research was related to wildlife tourism, I intend to continue my studies in the area where animals are used as tourism resources. Our relations with animals are often overlooked. However, they play a significant role in shaping our society. In this respect, I believe that human-NHA relationship is one of the essential

aspects deserving attention in our efforts towards the revitalization of communities. During my time in the TAOYAKA program, I hope to contribute to the community in achieving sustainable development.

After the program, although I would love to become an academic, I am open to any opportunities that might come my way. Wherever the future takes me, I wish to work internationally and contribute to the society at both regional and international levels. Now, this is my career plan, but the sky is the limit for me when it comes to pursuing opportunities. Perhaps, I will discover a new ability in myself in the coming years during the TAOYAKA program and open a new door towards my future career.

Zollet Simona (M1: Graduate School for International Development and Cooperation, Program in Educational Development and Cultural and Regional Studies)

From: Italy



I am Simona, and I come from Italy. Before joining the TAOYAKA program, I was studying Environmental Science and Sustainability at Ca' Foscari University, Venice. In 2013, I got an opportunity to spend a semester at Hiroshima University's IDEC, which sparked my interest in sustainable agriculture, food sovereignty, and community development. After

going back to Italy to complete my master's degree, I became part of an association that promoted cultural activities in my hometown. In addition, I am very passionate about vegetable gardening and organic farming practices.

My research plan focuses on smallholder farmers in marginal areas, especially young farmers. I believe that small farmers play a key role in providing food security and environmental sustainability; further, in order to achieve these goals, we need to convert the current industry-based and external input heavy paradigm of agriculture to a sustainable one. This implies emphasis on agro-ecological processes, soil and water conservation, renewable energies,

and the indigenous knowledge of local people. In particular, young people have the creativity and potential necessary to be the force behind this change; however, the challenge is to make agriculture an attractive career choice for them again.

I wish to contribute to this effort and, irrespective of my future career, I will keep working on issues associated with putting sustainable agriculture back at the centre of community development (or revitalization), as either a researcher or an active worker. I understand that equity, environmental sustainability, and food security for an ever-increasing world population are at stake.

Thakur Gajender (M1: Graduate School of Letters, Program in Humanities)

From: India

I am Thakur Gajender from India. Prior to enrolling as a TAOYAKA student, I completed my Master of Philosophy in Japanese Studies from the Department of East Asian Studies, University of Delhi, India. During this course, I obtained much information about the various aspects of East Asian countries; however, I primarily focused on the Japanese social security system. In addition, I submitted a thesis titled 'The Role of Japan towards the Development of Welfare State System: Regarding Social Security Policies for Aging Society'.

I am now working on the social security of the aging society of

Japan with a comparative study of South Asian countries and a special focus on India. The TAOYAKA program will help me to conduct concrete research on aging societies. The social security system of Japan can be compared with the systems of developed Western countries, like Canada and America. However, in this respect, the Japanese government needs to create appropriate policies for coordinating the declining birth rate and growing elderly population of Japan. After completing the TAOYAKA program, I plan to contribute to academic research in the fields of Humanities and Social Sciences by contributing articles to



international Japanese studies journals, such as *The Journal of Asian Studies* and *The Journal of Japanese Studies*. Further, I plan to contribute to the Japanese welfare sector, and I will definitely try to promote Japanese studies in India.

Qu Meng (M1: Graduate School of Integrated Arts and Sciences, division of Integrated Arts and Sciences)

From: China



My name is Qu Meng; however, my friends call me Mo. I hail from the cultural creation course. My interests include gardening, cooking, pottery, and aikido.

From 2006 to 2013, I worked as an interactive design director and VP between Shanghai and Beijing in the digital media art and museum design industry. As a non-profit art institution academic secretary in Xucun International Art Commune from 2011, I am applying myself to the revitalization of rural communities through international art

festivals.

Simultaneously with working, I obtained my bachelor's degree in Art Design from the Fine Arts Academy of Shanghai University. From 2013 to 2015, I researched on the topic 'Aesthetic Experiences in Augmented Reality Art' as part of my master's degree at Hiroshima University. In addition, in 2015, I co-organized the Earth Bag House project in Fukutomi town of Higashi-Hiroshima city as an art director. In this project, I committed myself to rural revitalization through volunteer work events.

Currently, I am focusing on the international contemporary art festival of Setouchi Triennale under the research topic 'Contemporary Art Intervention for the Sustainable Revitalization of Rural Communities' in the TAOYAKA program. Art festivals aim at revitalizing rural communities by

not only encouraging art tourism and rural tourism but also stimulating people to engage in creative thinking and attempting actively to promote the relationship between the natural environment and a sustainable society. They try to ease the 'depopulation of the psyche', which is intended as cultural impoverishment.

I concentrate on the 'sustainability' of festivals, 'intervention' for contemporary artworks and events, and the 'revitalization' of rural communities, although we cannot treat contemporary art as a nostrum for revitalizing all rural communities. Through my research, at least we will have a clear judgment regarding the types of rural areas that have the right condition to allow contemporary art to intervene and the type of art intervention that is beneficial for rural areas.

Technical Creation Course

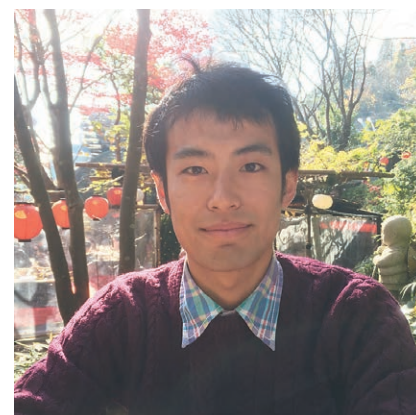
Kohei Shimasaki (M1: Graduate School of Engineering, Program in System Cybernetics)

From: Japan

I am Kohei Shimasaki. I'm from Kochi prefecture. And I am from the Graduate School of Engineering in Robotics Laboratory in Hiroshima University.

On April 2016, I joined the TAOYAKA Technical Creation Course. I am very interested in multiple course communication and the targets of disadvantaged

areas. I want to have precious opportunity have many kinds of experience that people cannot touch in normal life. This is why I aim to become a team leader who works hard with people from different fields in, for example, obtaining and using the relevant technology to solve the issues faced by disadvantaged areas; implementing a trouble-free



society; and obtaining a higher quality of independence, cooperativeness, and the ability to take action. Through this program, I want to become a researcher who can lead projects to contribute to the improvement of disadvantaged areas and for international societies. Subsequently, I will be able to obtain business chances from various points of view all over the world.

In my research, I utilize my programming skills to work on

image processing with high-speed vision. I plan to make an image processing hardware system providing high-speed vision. Using high-speed image processing, the efficiency of vegetation surveys can be improved significantly. Such surveys are beneficial in that they contribute to protecting the environment and endangered species of animals and plants. This novel technology can be implemented in a normal camera, as well.

Hence, I will make an auto vegetation survey system to understand the condition and distribution of crops with ease. In general, camera images are clearer than the memory of people. They can detect the problems occurring in this area. Further, I want to implement a multiple view system to understand wider areas. In the future, apart from the auto vegetation survey system, other systems such as a health monitoring system will be successful.

Hiroaki Gau (M1: Graduate School of Advanced Sciences of Matter, Department of Semiconductor Electronics & Integration Science)

From: Japan



I am Hiroaki Gau. I am from Fukuoka prefecture, Japan. My major is semiconductor integrated circuits. In April 2016, I joined the Technical Creation Course of the TAOYAKA program. Previously, in March 2016, I obtained my bachelor's degree in engineering from Hiroshima University.

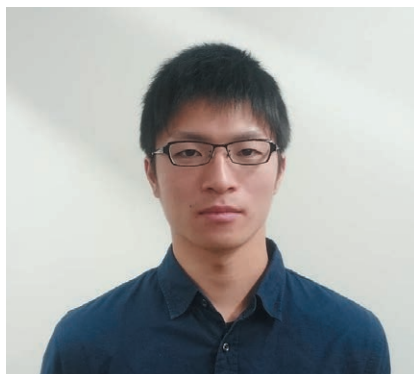
As an undergraduate, I mainly studied semiconductors. During my graduate study, I designed a two-port-SRAM memory for the hardware implementation of an image recognition system. Hardware implementation makes Internet access unnecessary. Hence, hardware implementation enables people to apply image recognition in disadvantaged areas. Through on-site education, I want to research the best application method of image recognition in disadvantaged areas and developing countries. In the future, I plan to design an image recognition system and do the hardware implementation by myself.

Through the TAOYAKA program,

I want to acquire communication skills, learn multiple viewpoints on various concepts, and develop problem-solving skills. After graduating from the program, I plan to work as an engineer in a multinational company. I want to contribute to not only the company but also the development of disadvantaged areas. Utilizing my experience from the TAOYAKA program, I will develop relevant technologies for disadvantaged areas and developing countries and become the leader of project teams dedicated to such areas. Using these technologies, I plan to improve the quality of life in disadvantaged areas and developing countries.

Yoshinori Ohnishi (M1: Graduate School of Engineering, Program in System Cybernetics)

From: Japan



I am Yoshinori Ohnishi, and I joined the TAOYAKA Technical Creation Course in April 2016. Before joining the TAOYAKA program, I studied system engineering, electrics, and mechanics at Hiroshima University. I not only love robots but also love to make robots. Moreover, I believe that robots contribute to the comfort and happiness of all humankind. Hence, I want to be a creator of

robots so that I can make amusing and useful robots for everybody.

My current research field is robotics (keywords: robot, design, control, dynamics, kinematics, and statics). Currently, I am developing a robotic arm for an airborne drone to pick up objects. It is very light weight and has a low reaction. This research requires the study of dynamics and controls. My goal is to pick up an object by using a drone equipped with a robotic arm. On achieving this goal, we can use this device to pick up objects at high or dangerous places. Of course, many problems must be faced before the robotic arm becomes a practical application, for example, the device's energy, safety, and usability must be considered. I will solve these problems progressively.

One more goal is to make tough robots that are difficult to break, for example, robots that go to dangerous places instead of human beings are easy to break at these places and do not come back. How can anyone fetch these robots? This is a serious problem. Therefore, I want to make tough robots. During my research in the robotics laboratory, I achieved these goals.

As I mentioned before, I believe that robots make our lives better. As a leader, it is very important to identify the areas requiring improvement and apply technics to these areas. The TAOYAKA program will help me learn the skills to achieve my goals.

Sharma Sneha Atul (M1: Graduate School of Engineering, Program in System Cybernetics)

From: India

My name is Sharma Sneha Atul from India. I pursued my bachelor's degree in Electronics and Telecommunication Engineering from Rashtrasant Tukadoji Maharaj Nagpur University in 2014. During my academic year, I always wanted to be a good leader and a good speaker. For that I usually took part in cultural and technical activities to enhance my personality.

I am also interested in sports activities like badminton, chess, and swimming. I participated in chess tournaments during my academic years. I applied for the PhD under the TAOYAKA Program in the Department of system

cybernetics in the Control System Lab in Hiroshima University under the guidance of Prof. Toru Yamamoto. The active team under him has been working on Control Systems similar to my proposed research plan. I am really looking forward to joining his team, as well as working and learning with them for the next five years. My plan is to begin researching information regarding my literature survey, taking part in on-site visits and gaining expertise on the required tools in the first year. After that I will create a proper work plan and start working accordingly in the second year. I aim to exercise the methods planned while trying for



optimization and implementation of the system in real time, also overcoming any shortcomings in the final three years of my research.

Taoyaka Program is the best platform where I could progress toward my future, being an amalgamation of technical, cultural and social implementation courses.

Technically after the Taoyaka Program I would like to implement my knowledge for social welfare

especially in disadvantaged areas. I plan to look for job opportunities after my studies. In the future I

would like to take my culminated efforts and become a professor.

Swagata Das (M1: Graduate School of Engineering, Program in System Cybernetics)

From: India



I am Swagata Das from India. I started my undergraduate education at the age of 17 and specialized in the Electronics and Communication Engineering stream from India, following which I completed my master degree in Electronics Design and Technology from Tezpur University, Assam, India, as a gold medallist. During the second year of my masters, I worked as a trainee engineer at CSIR-CEERI, Pilani, India, where

I worked on a Brain Computer Interaction project based on MATLAB, which was intended to assist immovable or paralysed patients.

During my undergraduate years, I got an opportunity to publish a paper entitled, 'Performance of a Hybrid MRC/SC Diversity receiver over Rayleigh Fading Channel' at an IEEE conference held at Bengaluru, India, in the year 2013. During the TAOYAKA program, I plan to design an assistive system that can be used by elderly people for lifting heavy objects or performing tasks involving muscle fatigue. I plan to do this with the help of pneumatic actuators.

TAOYAKA is a beautifully designed program covering the social, cultural, and technical aspects of

research implementation. After obtaining my degree in Japan under the TAOYAKA program, I anticipate myself to have wider levels of experiences and to be able to focus on social issues related to real-life. Further, I plan to return to my own country and join companies aiming at rural development and the advancement of disadvantaged areas directly or indirectly. Since I have not gained any work experience to date, after graduation, I hope to start my career by acquiring practical knowledge by working in core companies. Subsequently, I plan to focus primarily on the all-round development of disadvantaged areas in India through technical contributions, be it through an existing private organization or governmental organizations.

Social Implementation Course

Zhang Linghan (D1: Graduate School for International Development and Cooperation, Program in Development Science)

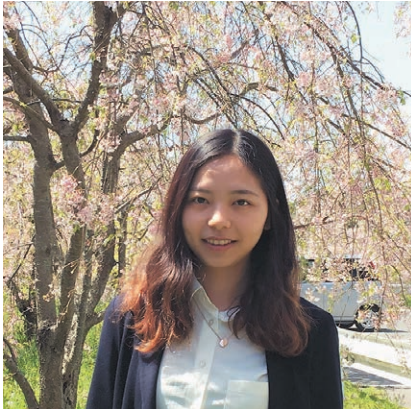
★Transfer Student into the 3rd Year of the Program

From: China

I am ZHANG Linghan from the People's Republic of China. In April 2016, I joined the TAOYAKA Social Implementation Course. In 2013, I completed my bachelor's degree in Tourism Management at Sichuan University, China. My

major is tourism management, which is a combination of multiple subjects, such as sociology, human geography, economics, and history. Following my undergraduate course, I went directly to Sun Yat-sen University to work for my

master's degree. At Sun Yat-sen, I systematically gained academic expertise and professional knowledge in the field of tourism planning. During the last term of my studies, I joined the exchange project between Girona University,



Spain, and Sun Yat-sen University. This six-month experience helped me broaden my horizons and understand international cooperation deeply. During my studies, in order to strengthen my practical skills, I participated in many field studies and tourism-planning projects, as

well. I kept participating in field trips to the heritage sites of UNWTO Sustainable Tourism Observatory Monitoring Program and joined the tourism-planning project in the rural area of Guangdong province. All these experiences helped me nurture my interest in rural area tourism and equipped me with basic knowledge for further studies.

I chose the TAOYAKA program mainly because it provides students opportunities for multidisciplinary study and international cooperation, which are essential for the international scholar of today. In my own research, I am interested in the rural tourism development of

disadvantaged areas. Considering the context of mobility, I will discuss how the mobility within globalization and features of rural regions affect the management and development of destinations.

The TAOYAKA program provides a great platform for academic, on-site, and interdisciplinary study. I strongly believe that all the trainings in this program will be beneficial to my future career and help me make my own contribution to the social development of rural areas. Study deepens understanding, travel broadens the mind, and communication provokes thinking. You can gain all these in the TAOYAKA program.

Kloepfer Thomas Michael (M1: Graduate School for International Development and Cooperation, Program in Development Science)

From: The U.S.A.

My name is Thomas Kloepfer from the United States. I received my undergraduate Degree at Appalachian State University in North Carolina. I double majored in Sustainable Development and Outdoor Experiential Education. I have been living in Japan since 2011. During this time, I worked at a Brewery, Textile Company, and as an English Teacher for the Onomichi city Board of Education.

I have been very interested in studying in Japan, specifically concerning agricultural and the environment. I have lived in many places in the Japanese *inaka*, a place of hard work, reverence for tradition, and bountiful nature. I hope that my studies in the Taoyaka Program will provide research and

support in the disadvantaged areas and I hope to continually be inspired by the people, cultural and agricultural abundance that exist there too.

The Taoyaka program will allow me the opportunity to take my skills and experiences further as I develop as a professional researcher in the field of environmental economics. My research topic concerns Hemp and its role for sustainable livelihoods in rural or disadvantaged regions. I specifically want to look at how Hemp as a resource can provide sustainable access to *ishokuju*. At present the misconceptions regarding Hemp and reliance on petro chemicals in clothing, food, and shelter has swayed us away from a plant that



has co-existed with man before written records.

In my “free” time I also work the fields on Mukaishima, in Onomichi. If you have interest in visiting farms in Japan, getting your hands dirty, or cultivating for body, mind and soul come on out to the Farm!

Hossain Aktar (M1: Graduate School for International Development and Cooperation, Program in Development Science)



I am Hossain Aktar from Bangladesh. I was born in 1990 at Cox's Bazar, a place famous for its unbroken beach, which is one of the world's longest beaches. In 2014, I received my Bachelor of Social Science in Economics from the University of Dhaka, Bangladesh; further, in 2015, I received my Master of Social

Science in Economics from the same university. While completing my graduation, I worked as a part-time research assistant at the Refugee and Migratory Movement Research Unit. From the very beginning of my graduation years, my cherished dream was to receive a PhD in the field of Development Science. Then the door of my dream started to open as soon as I learnt about the special PhD program run by Hiroshima University called TAOYAKA Program. I applied, and I was admitted to the TAOYAKA program as part of the April 2016 enrolment.

The aim of this program is to create global leaders. Therefore, through this program, I aim to become a

global leader by gaining the best qualities of a leader. The knowledge acquired from the program will serve as the basis for creating new ideas and methods for the betterment of the global society. On-Site Learning is one of the core concepts of the program, which encourages the sharing of ideas among students from different fields. I have keen interest in researching the impacts of climate change on the environment, human life, and the regional development of developing countries. After completing my PhD, I plan to start my career in an organization that works for human and global development.

From: Bangladesh

Tran Anh Quan (M1: Graduate School of Engineering, Program in Civil and Environmental Engineering)

I am TRAN ANH QUAN from Vietnam. I belong to the Social Implementation Course of the TAOYAKA program. In addition, I am a master's student at the Department of Civil and Environment Engineering, Graduate School of Engineering, Hiroshima University (Japan).

Previously, in 2010, I obtained a bachelor's degree in Transport Management and Planning from the Hanoi University of Transportation and Communication (UTC). After 4 years, I did a complete master's course in Traffic and Transport at Vietnamese-German University under the support of

Darmstadt Technical University (Germany). I worked for approximately 2 years as a teaching assistant in UTC. During this time, I worked as not only a transport researcher in the Transport Consulting Centre but also a transport consultant in the company of Sustainable Urban Development.

Subsequently, I joined some projects on rural transport system development in Vietnam. In particular, before coming to Japan, I participated in the traffic safety research project for motorcyclists in the northern mountain and midland area sponsored by the Vietnam Association of Motorcycle



Manufacturers and National Traffic Safety Committee. Participating in such practical projects has helped me acquire experience and knowledge. After careful observation of the success and failure of these projects, I recognize that my country, especially its

From: Vietnam

disadvantaged regions, has been facing serious and complicated transport issues. Until now, due to the lack of scientific approaches and technical innovations, they have not been solved completely. The example depicted in my research study is illegal parking behaviours occurring around and outside the old and narrow resident areas accessed only by motorbikes in Hanoi. These behaviours increased traffic congestions, traffic

accidents, and environmental pollution over the entire road network.

Hence, joining the TAOYAKA program will be a good opportunity for me to further my research interests under the enthusiastic instruction of excellent professors and learn up-to-date technical solutions that have been successfully implemented by the Japanese and other international

experts for transport improvement in their disadvantageous areas. Moreover, through the on-site training courses and interdisciplinary subjects offered by the program, I hope to be equipped with the skills and multi-sector understanding that are necessary for becoming a leading candidate in transport management and development projects in Vietnam.

Introduction of Academic Staff

Luni Piya, Ph. D. (Specially Appointed Associate Professor)

Affiliation: Graduate School for International Development and Cooperation (IDEC)



With Chepang kids: Taking a break during fieldwork

Hello. I am Luni PIYA from Nepal. I graduated from IDEC in 2012 with PhD in Rural Economics. After graduations, I worked in a Nepalese National NGO, which specializes in implementing development-cum-research projects focusing on the enhancement of rural livelihoods. I joined IDEC as Associate Professor in April 2015 and am affiliated to Taoyaka Program from May this year.

I believe that rural development is a prerequisite for a balanced national development. In the due course of development, every

nation passes a stage when urban development becomes the prime focus of national policy and development activities. As urbanization takes pace, rural development issues tend to receive comparatively lesser attention in the national development agenda. It is during this phase when the inequality between the rich and the poor is at its maximum. A country cannot achieve sustainable development unless rural areas receive equal priority in its development efforts.

In this context, my academic practices and researches are directed towards addressing the socio-economic, cultural, environmental, and policy issues prevalent in the rural area of Nepal. Specifically, my research focuses on the livelihoods issues of an indigenous community called Chepangs residing in the remote Mid-Hills. Rural livelihoods covers the issues of livelihoods strategies

like income sources (cash and kind); food security and self-sufficiency; livelihood risks and shocks; short-term strategies to overcome such risks/shocks; and long-term strategies to adapt to political/ socio-economic trends. I am also interested in studying the cultural dynamisms of this community, mainly focusing on the religious transformation. These findings are relevant for similar communities across South Asia.

My research expertise is relevant to the Taoyaka Program in many ways. Taoyaka Program also focuses on the disadvantaged regions of Japan and South Asia, which are similar to my research site. Since Nepal is one of the focus countries of Taoyaka Program, my research findings can provide a realistic background to design and implement on-site programs in Nepal. My research works are extensively based on first-hand interaction with community

members. Since on-site courses and trainings emphasize on the community based interactions for two-way learning and sharing, these components of Taoyaka Program matches my research interest in terms of research methodology.

My academic experiences are more directly related to the social implementation and cultural creation components of Taoyaka program in terms of understanding

the livelihoods of marginalized communities. Understanding the target community in terms of demography, socio-economic characteristics, livelihood strategies, and cultural practices are important for devising policies and projects for the livelihoods enhancement of such communities. In this regards, my expertise would also be cross-cutting with the technical creation components. In the days ahead, I look forward to having a sharing-learning interactions with the

multidisciplinary team of Taoyaka Program.



Household survey in a rural Chepang settlement in Nepal

Onsite Education

Onsite Course Rotation: Fall-Winter 2015

The first stage of the onsite education which consists of six classes including a one-day onsite visit

➤ **Akinada and Mitsuta Bridges in Kure, Hiroshima:** December 11, 2015

By **Sushil Bapurao Raut**, University Research Administrator (URA)
Supervised by **Fengwei An**, Specially Appointed Assistant Professor,
Graduate School of Engineering

Akinada Bridge Inspection



Recently various technologies have been evolved to maintain the construction sites, such as stadiums, urban heights (buildings), conventional and modern bridges,

historical sites, etc. Considering the requirements of inspection and maintenance, the specific technologies should be used for structure health monitoring. On

December 11, 2015, 11 Taoyaka students along with 7 professors and 2 staffs of Taoyaka Program have visited *Akinada* and *Mitsuta Bridges* in Kure City, Hiroshima Prefecture to get the knowledge of modern bridge inspection systems and maintenance technologies. This visit was a part of Technical Onsite Course Rotation, which is one of the major subject in Taoyaka Program. We targeted two types of bridges, one of them is Mitsuta Bridge the old bridge which is located inside the Kure city and another one is *Akinada bridge* the modern bridge which is sea-side-highway bridge also located in

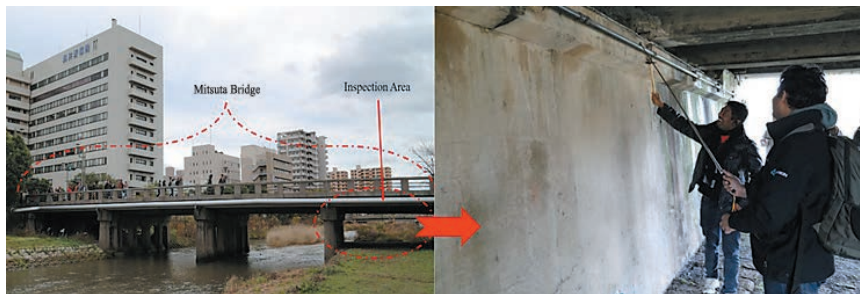
Kure area. During our visit we had 2 major objectives such as get the knowledge of conventional

techniques and modern techniques used for inspection and maintenance. We were accompanied by Kure

city office members and bridge maintenance company who are expert in structural health monitoring.

Our Schedule was as follows:

9:00-10:00	Lecture: Bridge asset maintenance in Hiroshima prefecture Presenter: Staff of Hiroshima Association of Civil Engineering Classroom: Large Conference Room, IDEC.
10:00-11:00	Move to Kure City , Hiroshima prefecture (from Bus stop in front of Daigaku Kaikan)
11:00-11:30	Visit Mitsuta Bridge maintained by Kure City Presenter: Staff of city office, Staff of Hiroshima Association of Civil Engineering
11:30-12:00	Interview staff of city office
12:00-13:00	Lunchtime
13:00-13:30	Move to Akinada Bridge
13:30-17:00	1. Obtain experience of bridge inspection (move to the top of main tower of the bridge) 2. Study and observation of bridge inspection by using drone system.
17:00-18:00	Return to Hiroshima University



At first we visited *Mitsuta Bridge* for inspecting health of under-bridge-concrete structure by conventional means of inspection. Since it is old bridge, we used hammer and surface rubbing tools to inspect concrete health.

After *Mitsuta Bridge* we moved towards modern bridge site. *Akinada bridge* is fully metal bridge which is supported by giant metal columns and steel wires. Such a durable and sturdy

construction makes it to sustain in strong wind, earthquake upto 8 richter scale and tolerate other natural calamities. In order to increase the life of bridge and its strength, it need periodic inspection and quick maintenance using modern engineering techniques. After arriving *Akinada bridge* site, we have attended introduction and instruction presentation which was presented by bridge maintenance company.

We put on life safety belts before climbing on metal tower (bridge column). Bridge has 2 towers of approx. 100 meter each. They are facilitated with special elevators. We used one of them to reach to the top of the tower. Maintenance staffs have explained us how they inspect and continuously monitor the tied metal ropes with manual and by using special sensors.

Then we got opportunity to enter at bottom of the metal tower and also bottom of concrete column. Maintenance company had flown Hiroshima University's Drones mounted with specialized camera to capture close-up images of the bridge. This technique is so efficient; it gives feeling of human eyes inspection without putting human life in danger. They had also



captured several images for our homework. We used those images to reconstruct concrete column using “Smart 3D capture” software. It helped us to realize the actual concrete structure without climbing on it as well as we can find out minute cracks on the walls. This visit was concluded with lot knowledge of modern technologies.

Group Presentations

The Group work on 18th and 25th of December was followed by group presentations which was organized on 8th January in Hiroshima University. Bridge inspection onsite was presented with three perspectives,

1. Technical Creation
2. Social Implementation

3. Culture Creation

We appreciate the efforts taken by university professors, staffs and other supporting members including Kure city office members as well as maintenance company to make successful technical onsite visit with unique experiences of modern technologies and facing challenges to keep bridges safe.

Onsite Training: Fall-Winter 2015

The second stage of the onsite education involving a short stay in disadvantage areas in Japan and overseas including India, Bangladesh, and Nepal

➤ **India:** March 10-15, 2016

By **Makoto Chikaraishi, Ph.D.**, Specially Appointed Associate Professor, Graduate School for International Development and Cooperation



Vishwasnagar slum



the Gujarat Institute of Disaster Management



Sanjaynagar slum
(construction site of SRA housing)

In March 2016, together with the Gujarat Institute of Disaster Management and Prof. Prem Pangotra from the Indian Institute of Management Ahmedabad, TAOYAKA program organized a training program titled ‘Challenges of Urban Development in Cities of Emerging Economies’ in Gujarat, India. It intended the development of an in-depth understanding of

developmental issues, challenges of urban planning and management, heritage conservation, innovative technological solutions, and the role of various stakeholders. In total, 19 students (13 students from Hiroshima University, 3 students from the University of Texas at Austin, and 3 students from some universities in India) participated in this training program.

The program offered lectures; interactive sessions with development experts, government officials, academicians, non-governmental organizations, and community members; and several field visits. The details of the lectures and filed visits are as follows:

DAY 1 (10 March): Urban Development Challenges

Lecture 1: Challenges of Urbanization in India [by Prof. Prem Pangotra]

Lecture 2: Reflection on Urbanization - Case study of Japan [by Prof. Akimasa Fujiwara]

Field Visit 1: Sabarmati Riverfront Development Project (SRFDP)

DAY 2 (11 March): The Redevelopment of Slums

Lecture 3: Issues of urban poverty and slums in Indian cities [by Prof. Prem Pangotra]

Lecture 4: Public Private Partnership for Slum Redevelopment - Case of Sanjaynagar slum [by Mr. Neeraj Lal]

Field visit 2: Sanjaynagar slum

DAY 3 (12 March): 'Janmarg': Bus Rapid Transit System

Lecture 5: Ahmedabad Bus Rapid Transit System(BRTS) [by Mr. IP Gautam]

Lecture 6: Ahmedabad Bus Rapid Transit System(BRTS) [by Prof. Shivanand Swamy]

Field visit 3: BRTS project

DAY 4 (13 March): The Improvement of Slums

Lecture 7: Water and sanitation in slum communities [Ms. Manvita Baradi]

Lecture 8: Slum Improvement Initiative [Ms. Bijal Bhatt]

Field visit 4: Vishwasnagar slum

DAYS 5 & 6 (14-15 March): Cultural Heritage

Lecture 9: Integrating cultural heritage in urban planning and development [by Prof. Rohit Jigyasu]

Lecture 10: Assessing heritage values and significance [by Prof. Rohit Jigyasu]

Lecture 11: Getting the city back to the people: Heritage Cons

Field visit 5: Heritage walk in Walled City



Sanjaynagar slum
(construction site of SRA housing)



Heritage walk in Walled City

Based on the lectures and field visits offered by the program, students were asked to perform group work to consider a proposal for promoting sustainable urban

development in Ahmedabad. Accordingly, students formed groups of 6 or 7, which prepared their own themes, as follows: "Slum Community Development

(Group 1), Overcoming Obstacles (Group 2), and Urbanization's Impacts and Opportunities for Women in Ahmedabad (Group 3)."



Group 1



Group 2



Group 3

The first group focused on the urban poor who live in slums and discussed possible solutions for the issues faced by slum dwellers, such as waste management issues, lack of access to basic services such as education, and the scarcity of employment opportunities. The group made some suggestions, including the formation of a handicraft organization for women and promotion of the recycle and reuse of garbage by slum residents to ensure better job opportunities and waste management. The second group set their theme based on an approach, instead of an issue. This group followed a type of

bottom-up approach: They tried to observe 'core' obstacles hindering successful development and then make recommendations tailored to each site. The third group focused on a particular social group, women, partly because Ahmedabad is widely known as the birthplace of the Self Employed Women's Association (SEWA). While recommending that more comprehensive discussions are required before reaching a general conclusion, the group found that some projects, such as slum upgradation, might contribute to the improvement of the quality of life of women.

Overall, the training program was successful in terms of improving our understanding regarding urban issues in India; however, we also learnt that the issues differ greatly from site to site and it is difficult to find a universal solution.



Students' presentation

The students' impressions of the training program (excerpt) are as follows:

Jenny Yamamoto (Social Implementation Course, Joined in September 2014)

When I reflect on the week we spent in Ahmedabad, my strongest impression was that for almost all of our speakers, these projects had become a part of their life narratives. This was partly because all of the projects had taken a long time – from idea, to design, to implementation; in fact, none of the projects are really “finished”. But it was also because one could see that each person had had to really struggle to actually realize their project. Their lectures were more like a recount of the challenges they had faced, and how they had overcome them.



Shree Kumar Maharjan (Cultural Creation Course, Joined in April 2015)

The rest of the World, both developed and developing countries, can learn lots of things from the city of Ahmedabad. Nepal, being a neighboring country, can also learn all of these achievements since the political and socio-economic contexts/situations are more or less similar. For instance, Bagmati River in Kathmandu valley also faces the same issue of water and air pollutions, land encroachment, issue of slums etc. are very much same as Sabarmati River. In that sense, Bagmati River can be like Sabarmati, if the government and civil society organizations join hands together in the form of public private partnership. Likewise, other successful projects in the city of Ahmedabad could also be done in Kathmandu city in Nepal and rest of the world to solve the issues and challenges related to Urbanization. The most important aspect in this regard is proper vision and action plan with the commitment of the government and civil societies



Onsite Team Project: Fall-Winter 2015

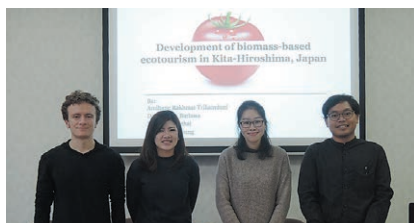
The final stage of the onsite education. The third year (D1) of TAOYAKA Students team-up with multidisciplinary course members and challenge a real-world problem.

➤ Japan (Kita-Hiroshima): during the academic year 2015

Project Members:

1. **Nattacha Paksung** (D1), Technical Creation Course
2. **Mattana Tunchai** (D1), Technical Creation Course
3. **Andhang Rakhmat Trihamdani** (D1), Social Implementation Course
4. **David Perez Barbosa** (D1), Social Implementation Course, a role of Cultural Creation in the project

Development of biomass-based ecotourism in Kita-Hiroshima, Japan



From the left: David, Nattacha, Mattana, and Andhang

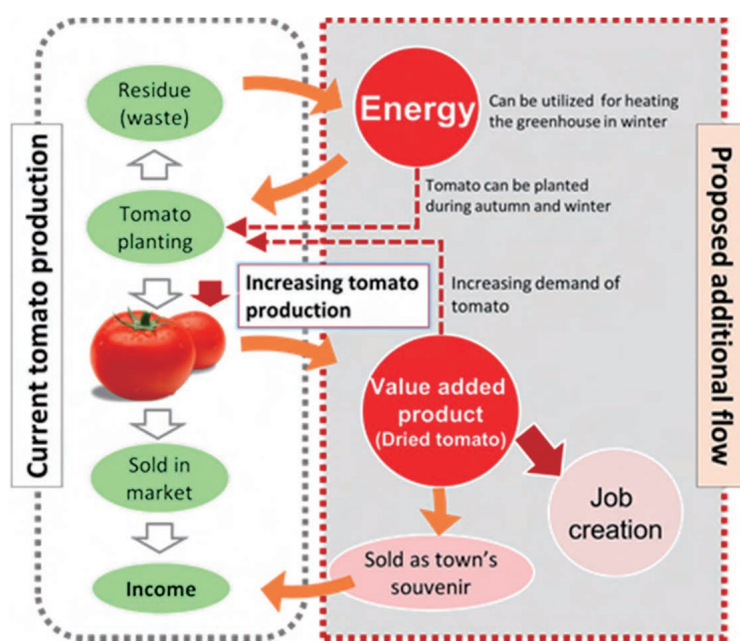
Being the first on-site team project in the Taoyaka program (May 2015 to February 2016), our team was assigned for catering to the situation, challenges, and opportunities of the site. The target

area of the project was Oasa and Chiyoda Town in Kita-Hiroshima, Hiroshima prefecture, Japan. The places are located in a mountainous area, 50 km from Hiroshima city. They are famous for cultural tourism (i.e. Kagura), as well as winter sports. Similar to the current state of many rural regions in Japan, Kita-Hiroshima is facing the issues attributed to an increasing aging population and depopulation, which pose many challenges for the region's future.

As an initial step, several field trips were conducted in order to understand the study area. We interviewed the people who are involved in agricultural and tourism practices in the region and stayed with a local family in Chiyoda, as well. Moreover, we joined the regular events held by a non-profit organization called INE OASA. Getting in touch with the local people helped us to gain useful insights and their cooperation as well.

From our experiences during the field trips, we listed the main problems faced by the area: (1) depopulation and an aging society, (2) limited agricultural production in winter, (3) inability of small-scale farmers to depend on the income from agricultural production alone, and (4) limited options for sport tourism in summer.

Accordingly, the objectives of our project were set as follows: (1) find mechanisms to increase the agricultural production of the area; (2) diversify the value-added products from existing agricultural production; (3) take advantage of agricultural residues to generate energy; and (4) utilize the natural environment to generate tourism activities, especially in summer. All these initiatives were aimed at creating further income possibilities and attracting more visitors, which would help the small-scale farmers, businesses, and residents in revitalizing the area.



Current tomato production flow and the proposed additional flow

Tomato related activities

Tomato is the largest vegetable product of Kita-Hiroshima; it is cultivated in the spring–summer seasons. In contrast, we could rarely find tomato-based products in the area. Moreover, the agricultural residue simply goes to waste. Therefore, we proposed a new cycle for the existing tomato production process (see below) in

order to enable the utilization of tomato residues for generating energy.

We chose supercritical water gasification (SCWG) because it is suitable to convert wet biomass into hydrogen-rich gas, without drying it. The gas produced by SCWG can be used for heating the greenhouse in winter. Therefore, it is expected that farmers will be able to increase their production by 0.2 ton (equal to 1.7 greenhouses) if all the tomato residues are turned into feedstock. Since the increment is quite small, other agricultural residues (e.g. rice husk) should be used, as well, to generate more energy to power more greenhouses.



Harvesting Tomatoes at the Farm in Kita-Hiroshima



Dried Tomato-Making Workshop



Home-Made Dried Tomatoes



"Kita-Hiroshima Dried Tomatoes" at the Organic market in Hiroshima City

In addition, we developed a tomato-based value-added product. In this study, from various options, dried tomato was chosen to be developed. In October 2015, a dried-tomato-making workshop was conducted to introduce the recipe to the local residents of Kita-Hiroshima. The results of a sensory test and market survey indicated that the dried tomato was acceptable

to the market, has potential for commercial-scale production, and could generate more income to the farmers.

Cycling-related activities

Cycling-related activities aim to provide more options to the existing sports tourism in Kita-Hiroshima. In order to study the town's potential regarding sports tourism activities, a group of 10 cyclists joined a cycling tour and visited several interesting sightseeing spots in Chiyoda and Oasa Town. The tour was conducted in September 2015 and after that, their opinions about the places and sports tourism possibilities of the town were surveyed. The results

obtained indicate a high potential for cycling tourism in Kita-Hiroshima in the warm season of the year. In addition, we developed a cycling map as a useful tool to promote the area.

Lessons learned

During the course of this project, we faced several challenges and difficulties. At the beginning, most of the difficulty was related to our limited skill in using the Japanese language and knowledge of the project site. We took time to find collaborators in the university, as well as Kita-Hiroshima. While implementing the project, we learned about the importance of balancing our academic goals and



Start of the Cycling Tour to Kita-Hiroshima

approaches with the perspectives of the local residents. This is because what we want may not be what they need. In addition, we need to integrate our visions of what we want to achieve from this project; what we want to learn from it; and how we can make it beneficial for our individual research, our group, and the local people. Moreover, we need to understand that the people living in the study area have their own lifestyles and routines that we should understand comprehensively before initiating any type of activity that involves them as a community.

Acknowledgement

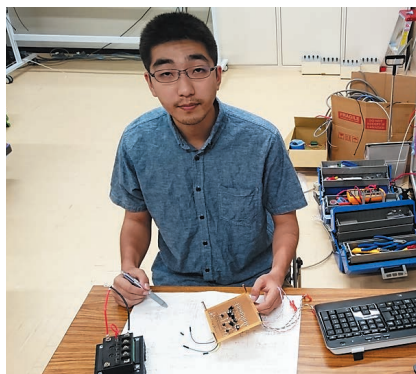
We would like to thank Mr Takahiro Hotta (INE OASA), Mr Yuji Makura, Ms. Asuka Toya, and the people of Kita-Hiroshima for their significant cooperation and support. We also would like to thank Mr Masafumi Yamashita for being our interpreter and actively cooperating as our fifth team member.



The Cycling Tour Group visit to **Tengushide**, one of the most remarkable sightseeing spots in Kita-Hiroshima

Internship at Tokyo Metropolitan University: Dec. 7-11, 2015 and Apr. 4-9, 2016

By **Yuki Nakamura** (D1), Graduate school of Engineering,
Department of System Cybernetics, Technical Creation Course



In recent years, renewable energy sources (RESs) represented by photovoltaic power and wind power generation have attracted extensive attention as a feasible solution to environmental problems such as the depletion of fossil fuels and global warming phenomenon. In Japan, especially, it has promoted the introduction of solar power generation, and the introduction amount has increased significantly following the rapid launch of feed-in tariff. Therefore, it is expected that the introduction of additional RESs will be promoted. Generally, RESs connect to the traditional power system by means of power electronics devices. In the future, with the increase in the use of RESs, the ratio of power electronics devices in the traditional power system will rapidly increase. These increases may cause adverse effects on the power system when system failure occurs. Therefore, in order to transmit electric power stably and efficiently, the development of power electronics devices with high performance and large capacities is necessary. Hence, in

my current studies, I focus on these devices.

Our laboratory has a simulated power system consisting of a solar powered battery, inverters, MG sets, and so on. Further, I have performed a verification test on my control model using this system. However, in order to carry my inverter to and operate it in disadvantaged areas, I must understand its structure and characteristics. Therefore, in this internship, I made a DC-DC converter and a single-phase inverter in Prof. Shimizu's laboratory in the Tokyo Metropolitan University, which has expertise in producing power electronics circuits. Prof. Shimizu is involved in the development and manufacture of power electronics equipment, and there are production and measurement equipment in his laboratory. It is a perfect environment for me to learn the basics of power electronics equipment.

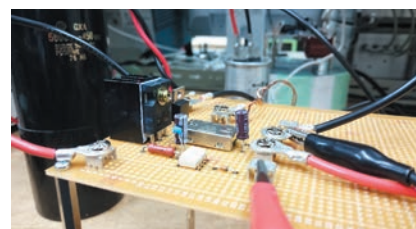
The fabrication procedure of the step-down chopper is as follows:

- The determination of the target specification of the chopper circuit operation theory
- The confirmation of circuit operation using the circuit simulator (PSIM)
- The production of the chopper circuit
- The operation test and characterization of the chopper circuit

- The extraction of problems and consideration of the solution

Since I have been conducting simulation-based research so far, I faced various problems during actually creating a circuit, for example, my knowledge regarding the functioning of the drive circuit and the measures of a surge voltage was lacking. In addition, when I operated the finally created step-down chopper, I found that the MOSFET was broken. This was due to the surge voltage, and higher than expected voltage was applied to the device when I actually measured it. Although I do not want to elaborate here, there were some heating and sampling issues.

In this internship, I was able to re-examine my research from different points of view. Although I faced some unexpected troubles during my internship, I consider them part of an amazing academic experience.



Switching device and drive circuit



Temperature measurement of the inverter

I was able to understand the importance of making things with my own hands. Therefore, I want to take advantage of this experience

and participate in the future activities of the Taoyaka program.

Finally, I express my sincere

gratitude to Prof. Shimizu and his laboratory members for the support and encouragement I received during my internship period.

Evaluation

Third-Party Evaluation Committee Meeting at Hiroshima University:

March 4, 2016



Discussion with external committee members

The 3rd Third-Party Evaluation Committee Meeting was held at Hiroshima University on March 4th, 2016. A total of 45 members attended, including six external domestic and overseas members, five committee members, 16 faculty members, 10 students, and eight staff.

To begin, Program Director, Prof. Sakakoshi, presented the program

activities during the year 2015, focusing on on-site education. Improvement of multidisciplinary seminars and the first implementation of the Qualification Examination (QE) were also announced. Following other members' presentations, students also reported on their research results and activities in on-site education. A discussion was also held between the external

committee members and some randomly selected students, which helped in understanding the program from students' point of view.

The external members then provided comments and suggestions, primarily concerning on-site and on-campus education and degree evaluation. Student achievement was highly evaluated. The meeting resulted in deep discussion on connecting on-site knowledge with on-campus education, developing a strong cooperation system with the research site, and continuing on-site research.



TAOYAKA students in discussion with external members



TAOYAKA students presenting their on-site team project



A TAOYAKA student presenting on-site training in Oki Island

Upcoming Events

- Onsite Training: Shimane (August 2016), India (March 2017), Nepal (March 2017)
- TAOYAKA Seminars (please check our homepage and Facebook for details)

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Flexibility, Endurability, and Peace

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