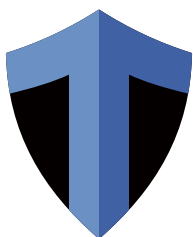


Tokyo Metropolitan University
Graduate School of Urban Environmental Sciences
Department of Tourism Science



**TOKYO METROPOLITAN
UNIVERSITY**

ANNUAL REPORT

Department of Tourism Science, Tokyo Metropolitan University





TOKYO METROPOLITAN
UNIVERSITY

ANNUAL REPORT 2022



Tokyo Metropolitan University
Graduate School of Urban Environmental Sciences
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01 Research Staff



Environmental Management Unit



Shinya NUMATA

Professor

Ph.D. (Tokyo Metropolitan University)

Tropical Biology, Urban Ecology, Protected Area Management



Takaaki NIHEI

Professor

University of Tsukuba

Geography



Takeshi OSAWA

Associate Professor

Ph.D (Kobe university)

Biodiversity Informatics, Conservation Science, Ecosystem management



Etsuro TAKAGI

Assistant Professor

Ph.D. (Agriculture)The University of Tokyo

Forest zoology, Population ecology, Natural history



Yuki SAKAMOTO

Assistant Professor

Ph.D (Univeristy of Tsukuba)

Human Geography, Cultural Geography

Regional and Urban Planning Unit



Tetsuo SHIMIZU

Professor

Ph.D. (Civil Engineering),
Tokyo Institute of Technology

Tourism Policy and Planning, Transport Studies



Susumu KAWAHARA

Professor

Ph.D (Engineerring) Waseda University

Urban Design and Planning , Community-based Tourism , Destination Management , Public-Private Partnership



Yu OKAMURA

Associate Professor

Dr. of Engineering
(The University of Tokyo)

Urban Design, Conservation Planning, Community-Based Tourism and Town Planning



Yuki OHIRA

Assistant Professor

Ph.D (Engineering), Kobe University

Infrastructure Planning, Transport Studies



Tomoyuki MASHIKO

Research AssistantProfessor

Ph.D. (Architecture) Waseda University

Urban Planning & Design, Post-Disaster Recovery Design



Norie HIRATA

Research AssistantProfessor

Ph.D (Tourism Science),
Tokyo Metropolitan Univeristy

Place branding, Regional Planning, Space design



Nguyen Van Truong

Specially Appointed Assistant Professor

PhD in Tourism Science,
Tokyo Metropolitan University

Transportation, Tourism Behavior,Big data

Behavioral and Management Sciences Unit



Kenro AIHARA

Professor

Ph.D. (Engineering)
(The University of Tokyo)

Information Engineering, Human-Computer Interaction, Behavioral Science, Cyber-Physical Systems, Crowd-sensing



Katsuya HIHARA

Professor

Ph.D. (University of Tsukuba)

Micro-economics, Management, Tourism/Transport Policy



Yohei KURATA

Associate Professor

Ph.D. (Spatial Information Science)
(University of Maine, USA)

Tourism Informatics, Spatial Information Science



Wu Lingling

Associate Professor

Ph.D
Hiroshima University

Tourism marketing, integrated tourist behavior modeling, big data analysis in tourism



Yu OGASAWARA

Assistant Professor

Ph.D
Hirosaki university

Social systems engineering



Makiko ASO

Research AssistantProfessor

MA in Tourism(University of the Ryukyus, Japan)

MBA (Graduate School of Management, Kyoto University, Japan)

Service Marketing, Tourism Education, Regional Management

Development of wildlife tourism attraction in Asian tropical rainforests

Numata, S. Takagi, E.

The aim of the project is to develop a tourist attraction program using wildlife (VH: virtual hunting), and to construct management system towards tourism, conservation, and environmental education in ENRP. A camera trap system of wild-life-based tourist attraction "virtual hunting" is developed and implemented in nature

and semi-nature area in ENRP under the collaboration between TMU-UTM, JNPC, and JSG. The system involves video-trapping camera, tourists' activity (shooting), archiving, and data delivery as a trophy of the virtual hunting. In FY2022, we hold a field seminar to

share how to use camera traps for tourist activity in Endau Rompin National Park (ENRP), Peninsular Malaysia. Tourist guide and education materials was developed to enhance educational effect of VH. The wildlife has been monitored by camera traps as baseline information, and partly analyzed for conservation practice.

Factors affecting the littering behavior in urban parks

Numata, S.

Littering is one of the most serious issues in public spaces, and park environment and visitors' littering behavior are in a vicious circle. Littering behavior is generally influenced by not only psychological factors but also internal and external environmental settings of places including type of uses, crowdedness, facilities around parks. However, little is known about how such internal and external environmental

setting of urban parks could affect people's littering behavior. Therefore, this study aims to examine factors affecting the littering behavior in urban parks. I focused on littering behavior and their mechanism with the internal environmental characteristics and external environmental settings of the park, and then discussed how

to apply the results of the study on management of the urban parks. We found the amount of cigarettes was the greatest among the common types of the litters, while that of masks was the lowest. The results of GLMMs suggest that the play equipment had significant negative effect on the amount of litters from cigarettes, drinks, bottles and masks in the urban parks. (Ni,Rongxia Master thesis)

School Teachers' Perceptions of and Educational Practices of Biodiversity

Numata, S.

Biodiversity is one of the important keywords in nature conservation, and education for biodiversity conservation in primary and secondary schools would play an extremely important role. However, there are difficulties in biodiversity education because the definition of biodiversity is not generally unambiguous. People's perceptions of biodiversity have been studied from multiple perspectives, but few studies quantitatively examined

differences in school teachers' perceptions of biodiversity, and factors that may influence their perceptions. We examined teacher's perception of biodiversity and their educational practices, as well as the factors that influence their perception and implementation, among public elementary and junior high school teachers in Hachioji City, Tokyo.

Our results revealed that the relative importance of biodiversity in environmental education was high in terms of teachers' awareness of biodiversity. The results of GLMMs revealed that the amount of nature experience in childhood and psychological connection to nature have significant effects on biodiversity knowledge and understanding. We also found that elementary and junior high school teachers' awareness and implementation of biodiversity differed by school type. (Rikukawa, Saki Master thesis)

Establishment of methodology for nature-based tourism from geography: making of a landscape database of North America

Nihei, T.

Regarding the research theme, in this fiscal year, I created a database of slide pictures (unfinished). Here is an example:

Figure 1:
[HTTP://2242.MOOO.COM/POS1/94US5/1313.JPG](http://2242.MOOO.COM/POS1/94US5/1313.JPG)

This link shows an old picture I took in August 1994. The location is Fisherman's Wharf in San Francisco, California.

When you arrive at Los Angeles airport during the summer

vacation, you will find that the air is hot as well as Tokyo. But, if you drive to the coast of San Francisco, you will find that the air is chilly. It brings low-hanging clouds. You may need a long sleeve shirt. (by T. Nihei)

Establishment of methodology for nature-based tourism from geography: making of a landscape database of Japan

Takaaki Nihei

Regarding the research theme, in this fiscal year, I created a database of slide pictures (unfinished). Here is an example:

Figure 2: [HTTP://2242.MOOO.COM/POSI/94MATU/114.JPG](http://2242.MOOO.COM/POSI/94MATU/114.JPG)

This is an old slide I took in June 1994. The place is a post town of Narai, Nagano Prefecture. In a narrow valley of a tributary of the Shinano River, the post town was thriving during the Edo era. The tin roofs of the old buildings tell

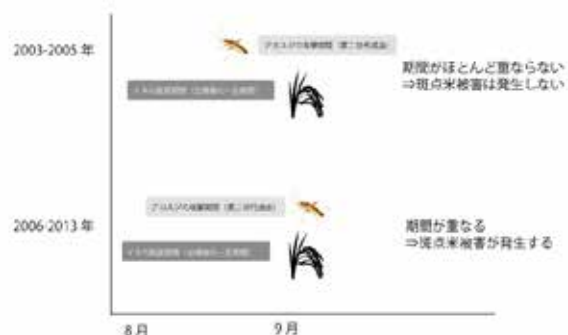
us that it is a snowy country.

This area is designated as a historical monument. The traditional landscape is maintained. If you look for pictures older than this, you may find modern living infrastructure such as utility poles and gas cylinders. Once, my supervisor said, "Ikeba ikuhodo furukunaru" (the more you go, the older the scenery becomes). (by T. Nihei)

Biodiversity Informatics based on Natural history collection

Dr. Osawa

Natural history collection such as specimen, observation records and data from citizens are one of important resources for several research themes. Integrate these resources, and conduct research using these we called "Biodiversity Informatics". In this year I evaluated the effects of climate change for pest insect on rice using computer simulation and governmental statistics (Tamura et al. 2022 Sci. Rep.).



Discovery and evaluation of Ecosystem services

Dr. Osawa

Ecosystem services are defined as several benefits that humans gain from the ecosystems. Some of ecosystem services were already provide several benefits for human. However, there might be much more ecosystem services which has

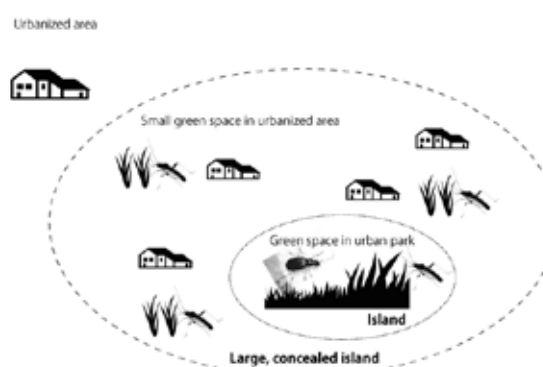
insufficient recognition by human society. To grasp and conduct quantative evaluation are important for the conservation and sustainable use of ecosystem. In this year I evaluated the disaster

risk reduction function on agricultural ecosystem using statistical modeling and simulation approach (Osawa et al. 2022 Int. J. Disa.Red), and evaluated a potential pest control effects by frogs in paddy field (Baba et al. 2023 WETLAND).

Biodiversity in Urban parks

Dr. Osawa

Urbanized area is heaviily modified by human activities. A urban parks could harbor regional biodiversity in urbanized area. I focused the urban park as an important habitat in urbanized area. In this year I found surronuding scatterd green space could contribute biodiversity in the urban park (Ohata et al. 2022 Urban Ecosystems).



Population dynamics of insects and its effects on social-ecological systems including tourism

Etsuro Takagi

Insects are mega-diversity group. Their habitats are around the globe, and they play important roles in many ecosystems. In general, however, insects are not preferred by human. They are rarely tourist attractions.

Insects are ecosystem engineers in many ecosystems. Various insects modify

ecosystems. Recently, an appreciation has been developing of how these ecosystem engineers affect ecosystems ecologically and economically, namely property values, quantity and quality of marketable timber products, landscape aesthetics, recreational

experiences, and tourism appeal. However, too little data, limited information are available. Thus, I am focusing on the ecological and economical effects of insects which are ecosystem engineers on ecosystems. Two works have been out in scientific journals.

Geographical Study of Music Practice and Using Resources

Sakamoto, Y.

This study analyzed the connection between music and locality through a focus on "musicking" using case studies from Hachioji City in Tokyo, Matsumoto City in Nagano Prefecture, and Nanto City in Toyama Prefecture. By examining the process of music practice and the use of local resources, this study provides empirical

evidence of the relationship between music and locality. The study confirms that local residents who recognize the usefulness of music as a local resource are crucial for establishing a strong relationship between music and the local community. Furthermore,

the study suggests that when music is utilized as a local resource, it can become a more community-based musical practice by involving people in the production of vernacular music.

Studies on impact assessment measures of transport and tourism policies using the combination of big data

Tetsuo SHIMIZU, NGUYEN Van Truong and Yuki OHIRA

The following studies aiming at development of methods on impact assessment of transport and tourism policies using the combination of population flow data, credit card transaction data, destination search data and SNS text data were conducted. (1) Effect of COVID-19 on change of attitude

toward tourism activities was analyzed using transaction data of a credit card company. (2) Effect of traffic control measures including congestion toll implementation on route choice behavior on the expressway network in Tokyo Metropolitan Area during the Tokyo

Olympic and Paralympic Games was analyzed using ETC transaction database. (3) Temporal-spatial variation of zonal population was analyzed using population statistic database by telecommunication company for developing travel demand analysis methods in rural areas.

Studies on assessment measures of route guidance system in tourist destinations

Tetsuo SHIMIZU

The following studies aiming at development of methods on assessment measures of route guidance system in tourist destinations were conducted. (1) Method for assessing numerical continuity of

destination guidance in signage system of large railway terminal stations with multiple operators was proposed. (2) relation between disorientation and change of integration value, which is the

indicator of link centrality on road networks in the space syntax theory, at an intersection was analyzed.

Studies on how transport and tourism business tourist should introduce new technologies to user services and business efficiency

Tetsuo SHIMIZU, Susumu KAWAHARA and Yuki OHIRA

The following studies aiming at design of implementation process on application of new technologies to transport and tourism industries and tourist destinations efficiently were conducted. (1) Check sheet in which how each new service or device can meet

needs and wants by stakeholders in tourist destinations, for seeds and needs matching among technology/service vender industry and tourism industry in tourist destinations, was developed through intensive stakeholder interviews.

(2) The framework of introducing need-driven ICT and DX technology to road traffic management and transport service was investigated through expert interview surveys.

A Study on Systematization of Planning Techniques for Sustainable Destinations

Susumu KAWAHARA and Yu OKAMURA

We worked on a planning theory that integrate both tangible (e.g., preservation and improvement of urban space and environment) and intangible plans (e.g., plans for tourism programs and contents creation.) to develop more sophisticated sustainable destination, especially due to the recent targets of tourism planning in Japan are biased towards intangible programs.

Our detail methods are

- to learn and reflect sightseeing behaviors and tourism resources in geographical / spatial environment
- to develop environmental improvement, utilize the private sites and the public sites together
- to realize a vision based on social experiments



02 Research Summary

2-2. Regional and Urban Planning Unit

02

• to support all the method above by organizational design, process design, and monitoring

In FY2022, the final year of the project, the following outreach activities were conducted based on the final draft of the book "Methods for Creating a Sustainable Destination (tentative name)", which is

currently being written.

- The book's key theory and method, "Float Vision & Action," was practically verified as a means of revitalizing the central city center of Hachioji City.
- The authors gave a series of 15 special lectures at the Department of Tourism Science of Tokyo Metropolitan University.

- Design management for the dissemination of the planning method was examined. Icons for each method and a list chart summarizing them were created, and discussions on their usage were deepened.

<https://www.comp.tmu.ac.jp/ssm/study/theme/sustainable-destination-planning.html>

Experimental study of actions toward the creation and realization of a "landscape picture book," a float vision for the central city area of Hachioji

Susumu KAWAHARA

This is a practical study applying the methods of the Float Vision and actions toward its realization proposed by the Sustainable Destination Planning Study Group (research representative: Kawahara) toward the creation of a landscape that enhances the attractiveness of the central city area around Hachioji Station. The planning method called "float vision" does not aim to be positioned in government plans or to be business-oriented at first, but rather to visualize in an easy-to-understand way the image of future space and activities that many people will want to be involved in and invest in. It is also a method of working through public-private partnerships to take rapid action toward the realization of the plan.

In FY2021, through repeated discussions

at both the Landscape Design Conference consisting of experts and citizen workshops, a "landscape picture book" was created and published, which depicts in sketches and simple language the future images of 10 model central city districts. In FY2022, the Kawahara Institute took two actions to realize the sketches. The first is "Asinamidori," which promotes ground planting in public spaces and storefront spaces. The second is the "Black Wall Canvas," which aims to further enhance the landscape and attract visitors by utilizing the wooden black walls that have been promoted in the Kagai area.

Both of these projects were conducted as social experiments with local citizens and businesses. Based on this experience,

we have identified issues for the next year's program, and have created a team and funding structure to continue the project. For more details, please visit the website.

<https://www.comp.tmu.ac.jp/ssm/study/project/floatvision-of-Central-hachioji.html>



Development of Eco-study Tours as a Method of Managing the Historical Environment in Collaboration with the Local Community around the Imperial Tomb in Hue, Vietnam

Susumu KAWAHARA

The mausoleums of the emperors of the Ruan Dynasty, the last dynasty in Vietnam, are recognized as a component of the UNESCO World Heritage Site "Complex of Hue Monuments." We have revealed that not only the buildings but also the surrounding natural environment, villages, landscapes including rice paddies, and water management systems were uniquely devised and planned to suit the Vietnamese climate based on the Chinese philosophy of feng shui. However, the landscape and the water utilization system are being destroyed by the Vietnam War, recent changes in agricultural and forestry methods, and

spatial modification for tourism purposes by non-regional capital.

The author's research team in Japan has shared the planning concept of the Imperial Mausoleum with villagers and government officials, and has been conducting eco-study tours since 2017 for the conservation of the historical environment of the Imperial Mausoleum and appropriate tourism utilization.

This year, we conducted a demonstration project to create an eco-study tour of the Third Emperor Thieu Tri's mausoleum, utilizing the results of our research. We

conducted tours and workshops for the staff of the Hue Monuments Conservation Center and organized the basic idea of creating a script for a guide for the general public. We devised an explanation that connects the historical mausoleum environment with the history of successive imperial families and Nguyen Dynasty culture. In the future, we will use the results of this research to add value to the unique environment and culture of the Phong River Basin area, including the surrounding environment of the "Monuments of Hue," which has already been recognized as a World Heritage Site. The committee also recommended that academic knowledge be

provided to the Vietnamese government in preparation for the re-nomination as a World Heritage site, and that eco-study tours be developed as educational and awareness-raising activities.

For more information on environmental management in the Phong River Basin, please refer to "Development of Sustainable Management Planning Theory of Historical Ecological Environment in the Xiangjiang River Basin, Vietnam" (PI: Shigeru Satoh, Waseda University) on the Grants-in-Aid for Scientific Research database, etc.

Development of a New Method for Regional Interpretive Exhibition and Education Using a Projector Mapping Model System

Susumu KAWAHARA

In recent years, projector mapping model systems (P+MM), which can project a variety of thematic maps onto models using a projector, have been introduced in museums. The images projected by the P+MM can be freely created on a PC, so it should be possible to use the system in a variety of ways. However, the current state of use in many places is that the projected contents are not updated very often, and the system is only used for one-way explanatory displays.

Therefore, we are collaborating with a manufacturer to develop a P+MM that can be used for real-time writing and projection on the models, and for many people to create and bring in their own content for projection, and we are researching new ways to use the system as an explanatory

exhibition tool that can also be used by private sector guides, and as an educational tool.

In FY2020, we tried a method of projecting and discussing thematic maps created by students in the tourism planning and design exercise of the Tourism Science Department.

In FY2021, students from our department and I created a projection work, "Sake and snacks made with Hachioji ingredients," as exhibition content for the Hachioji Museum, in collaboration with the Hachioji City Hall. The projection work is characterized by the fact that it uses "food," which people are easily interested in, as an entry point to express the resources and stories that make up Hachioji's Japanese Heritage.

We also proposed a workshop method that local producers could use this exhibition work for their sales promotion.

In FY2022, we interviewed local producers and prepared to release our content in the museum. As a result of the above, this was the first case in Japan where the P+MM system was used in tourism and education. It was also the first case in Japan where general users, not P+MM manufacturers, created content using general-purpose software, installed and displayed it on the system themselves, and made it interactive in terms of drawing and data updates. In addition, we were able to develop a system platform that easily facilitated this process.

<https://www.comp.tmu.ac.jp/ssm/study/theme/Tourism-Applications-of-Technology.html>

Concept and Practice of the Ota Creative Town

Yu Okamura

Ota Ward is a town where world-class technological manufacturing overlaps with a rich and enjoyable lifestyle. In April 2017, the Ota Creative Town Centre was established by universities (Tokyo Metropolitan University and Yokohama National University), tourism associations and local industrialists, with the aim of realising a future vision of a 'creative town' where the

region itself continuously fosters value. Various projects are being developed using this as a platform.

In FY2022, the organisation worked on the post-war history of manufacturing, approached through map surveys and interviews with factory managers; the implementation of the Ota Open Factory, which opened all factories to the public

for a limited period for the first time in three years; and the implementation of monitor tours of the "Factory Trip", a factory tour programme for educational tours and the planning of its business plan. Part of this research was funded by the Faculty of Urban Environment Inclined Research Funds Young Scientist Incentive Research.

The changing structure and planning trends of walking trail projects in suburban areas and the potential for their utilisation in an era of shrinkage

Yu Okamura

This study focuses on the phenomenon that 'walking trail projects' comprise push factors generated by the lifestyles of citizens who take walks, such as health, recreation and mobility, and pull factors that lead to the formation of the environment expected by the regions that receive visitors, such as suburban and holiday resort development, conservation and utilisation of natural and cultural resources and community formation. The research topics include, firstly,

a study of the general history of 'walking trail projects' (period classification and clarification of the characteristics of each period), secondly, case studies of walking trail projects in specific areas, and thirdly, planning proposals, implementation and evaluation of 'lifestyle experience-type walking trails' as research topics. In FY2022, with regard to walking trail projects originating from overseas cases, the aims of the developing organisations

in Japan, the relationship with the organisations involved in overseas normative cases, the methods of technology transfer and the characteristics of the introduced planning technology were clarified, and the methods and issues of technology transfer from overseas in the walking trail projects were discussed. Note that this research was funded by the Grant-in-Aid for Scientific Research (C).

Research on international technology transfer and networking of sustainable tourism destination development and management scheme

Yu Okamura and Prof. Kawahara

Efforts have been made in various places to build a comprehensive method from the conception of a vision to the creation and provision of tourism contents and resource management, and to aim at the formation of a sustainable tourism region as a whole. This study calls this 'planning technique for the formation of sustainable tourism areas' and focuses on the international transfer of technique from overseas to Japan, its diffusion and transmission within Japan, and exchange and network formation between

the regions concerned. The study examines how the original model of the transfer source is based on the specific conditions (policy/planning/environment/resources/industry, etc.) of the transfer destination (is it localised?), and how the relationships between regions that share this technical knowledge contribute to improving the sustainability of the tourism region in question. In FY2022, field surveys were conducted in

areas where several planning techniques have been introduced, such as Aso and Hagi, and interviews were conducted with relevant persons to ascertain the characteristics of each planning technology and the actual status of international exchange triggered by the introduction and development of planning technologies. Note that this research was funded by the Grant-in-Aid for Scientific Research (B).

Analyses on assessment of transport and tourism policies using big data

Drs. Ohira and Shimizu

We have considered methods for evaluating the impact of tourism and transportation policies using big data such as transportation and consumption data. Specifically, (1) we analyzed the changes in

route choice due to the congestion pricing policy on the Metropolitan Expressway introduced during the Tokyo 2020 Olympic and Paralympic Games, using ETC log data and vehicle sensor

data. (2) We used card payment data provided by a railway company to understand patterns of changes in tourism-related consumption before and after the spread of COVID-19.

Studies on evaluation of guide signs in tourist destinations

Drs. Ohira and Shimizu

We examined a method for objectively evaluating and diagnosing the placement and installation of guide signs in large railway stations and tourist destinations visited by many tourists. Specifically, (1) we constructed a network data that reproduces

the current placement of guide signs in the station premises of large railway stations in the city center, and diagnosed the continuity of the guide signs by investigating the accessibility from any departure point to the destination. (2)

Based on the analysis of the street network structure and a video watching experiment, we proposed indicators that could be used as reference criteria for the placement of guide signs in tourist destinations.

Practical research on pre-reconstruction town planning for disaster prevention/mitigation and the formation of spaces conducive to recreation

Tomoyuki MASHIKO

In the Totsuka district of Shinjuku Ward, Tokyo, a research-based practice was conducted to add recreational elements to disaster prevention and disaster mitigation spaces such as evacuation routes, squares and rest areas. First, based on the results of the ongoing pre-restoration activities in 2021, spaces in the district that are likely to generate recreational activities were extracted and town planning was carried

out. In cooperation with the local residents' association and the council, the programme 'Halloween Disaster Prevention Walk' was implemented to encourage the participation of young families and foreigners, and a study was conducted on places that can be used not only in the event of a disaster, but also on a daily basis. Secondly, in a lecture for undergraduate students, group work was conducted in the

same area to study the development of spaces that can be used for both disaster prevention and recreation. Personas and activities were envisaged for the rest areas on the four evacuation routes, and recreational spaces were envisaged that people would want to use on a regular basis. The results of this work will be considered for reflection in the content of pre-recovery activities in the following years.

Analysis of the delocalization of bars and changes in customer usage behaviour after a major disaster in Amatrice, Italy

Tomoyuki MASHIKO

The mid-mountain region along the Apennines, which runs the length of the Italian peninsula, has developed as a tourist destination for people living in urban areas and is particularly characterised as a summer resort. On the other hand, the region is also at high risk of earthquakes, with the 2016 earthquake in central Italy causing human

and material damage in a large area spanning four regions. In this study, a bar in a settlement facing the old Salaria road in Amatrice, Lazio, was the object of research, and the actual relocation of the bar and the change in visitor behaviour were analysed. The results show that the bar's relocation to the neighbouring area has ensured the

continuity of the visitors' life behaviour and that the bar functions as a place of exchange in the disaster recovery process. As this survey was conducted in March 2023, more than 80% of the visitors were local residents, it is required to conduct the same survey in summer 2023 to understand the usage behaviour characteristics of tourists.

Recovery tourism for regional development and disaster transmission

Tomoyuki MASHIKO

In recent years, disasters have become more frequent and more severe in many parts of the world. In the reconstruction of disaster-affected areas, it is important not only to rebuild homes and revitalise social and economic activities over the medium to long term, but also to develop a tourism concept that includes the transmission of disaster legends. In addition to traditional methods of disaster lore, such as the use of

place names and biographies, there is also a trend towards the use of facilities, such as the construction of folklore halls and prayer parks. In this study, we visited the reconstruction museum in Venzona, the area affected by the 1976 Friuli earthquake, and investigated its exhibition structure and methods of transmission, as well as their impact on regional development. As a result, the following characteristics were

identified: 1) the flow of exhibitions that enable people to relive their experiences of the disaster; 2) the structure of the museum, which includes an exhibition room and a reference room; 3) the preservation of the original form of the damaged village and its use for training in damage assessment; and 4) the construction of bicycle paths and the installation of explanatory panels.

The development of human resources for implementing the tourism policy plan for sustainable tourism development

Dr. HIRATA

In order to create sustainable tourism regions, it is necessary to practice tourism management and regional development/regional resource management in cooperation with both wheels. In order to promote public-private cooperation in the creation of tourism regions, in which multiple entities, including local governments and local businesses, work together to realize regional development in each region, human resources with the knowledge to formulate appropriate regional policies and to develop policies and projects that are consistent with these policies and projects are needed.

Based on this hypothesis, we conducted a survey on the knowledge and skills needed by key persons in the region involved in regional development and regional resource management, and analyzed and summarized the results. In addition, we surveyed and analyzed the situation in Japan regarding regional branding efforts through collaboration between local governments and the private sector, utilizing the Blue Flag, where regional resource surveys and regional resource education for local residents are practically conducted by regional resource management personnel.

This research was supported by JSPS KAKENHI Grant-in-Aid for Young Scientists.



Development of a local learning program through the use of color to promote the creation of a resident-centered tourism community

Drs. Ohira

In order to realize the creation of a sustainable tourism region, it is important for local residents to be actively involved in the management of local resources. In order to induce voluntary management by local residents, it is first necessary for them to learn about local resources. The purpose of this study is to develop, practice, and evaluate a program for local residents to make local tourism development a personal

matter by utilizing color. We define "local color palette" as a collection of local colors created by local residents themselves by learning about local resources and assigning the meaning of the resources to the extracted colors. In this fiscal year, in order to develop a prototype of the regional color palette, we conducted on-site color surveys at several tourist attractions and conducted a

preliminary design of the regional color palette to induce a change in the consciousness of local residents. Research is underway to develop a new regional learning program using color as an entry point that can be used across generations, genders, and industries. This research was supported by Grant-in-Aid for Scientific Research for Young Scientists.

Disseminate information on academic findings for the appropriate use of vacant houses

Dr. HIRATA

The Housing and Urban Planning Support Council of the Architectural Institute of Japan (AIJ) has been studying ways to provide the academic knowledge accumulated by the AIJ to the general public and various public organizations in an easy-to-understand manner, and has been providing information through the AIJ website and other means. The Information Project Subcommittee has been engaged in the following specific

activities to provide the public with the necessary knowledge on the proper use of vacant houses and how to deal with dangerous vacant houses such as specified vacant houses. First, we collected papers on vacant houses published from 2016 to 2021 and organized them into a chronological map of papers. Next, we collected articles on the overview of the vacant house system, research, and good practices from the society members, and in 2022, we

reviewed and edited the collected articles for the release of the website. The website (<http://news-sv.aij.or.jp/shien/s2/akiya/index.html>) was opened to the public in February 2023.



Research on overtourism

Nguyen Van Truong

Over-tourism has become a critical issue in many famous tourism areas in the world. This study determines determinants of tourists' satisfaction at a destination based on the difference between the actual experience and the expectation (perception) of tourists before they travel. Then, policy implications will be formulated to fulfill the

tourists' satisfaction and focus on these identified determinants. On the other hand, countermeasures to improve community satisfaction of tourists also proposed relying on the determinants of local residents' satisfaction of tourists. The study is executed in the context of over-tourism. Biei or Kyoto will be chosen

as a case study.

Research on public transport quality of service

Nguyen Van Truong

Service quality is a determinant of increasing public transport rider satisfaction. However, understanding of service quality and satisfaction relations has been limited. This study seeks an appropriate method to demonstrate the nature of service quality-satisfaction relations. The importance-performance analysis (IPA) and

the three-factor theory, the most widely preferred for public transport service quality prioritization based on the importance of service factors to rider satisfaction, will be utilized. The study takes transit service in Ho Chi Minh City (HCMC), Vietnam, to demonstrate that the three-factor theory, which has been

limitedly utilized despite being more advantageous and robust, is superior to the IPA. It suggests that enhancing passenger information, rider care, and comfort are recommended as the most practical and economical measures in the short run.

Research on tourism statistics

Nguyen Van Truong

In tourism, accommodation statistics are fundamental data. However, research on improvement of the statistics regarding accuracy and availability for small regions is still limited. This research focuses on minimizing the variance and bias (or accuracy) of the accommodation statistical

estimate in two cases: large and small (prefectural and regional) areas. This study recommends an integration of bootstrap and regression to overcome the challenge. An unbiased linear estimator is used as a benchmark to investigate the integration method's effectiveness. A case study of

Japanese accommodation statistics was adopted to expect the tourism accommodation statistics to be improved.

Research on advanced flow grasping methods base on collecting data from reserved spots and its analysis

Kenro Aihara

This research is being promoted with the aim of realizing "microscopic flow grasping" that realizes inflow and outflow to the target area and grasping the flow within the region by aggregating the movements of each individual. The purpose of this study is to propose and realize a methodology for recording, collection, analysis of moving vehicles

that recognized by using detectors installed at multiple points in the city in order to grasp the flow of automobiles. The system consists of a network camera, a processing PC, and network equipment for data transfer, and recognition results on the edge are aggregated in the cloud in real time. In FY2022, with the cooperation of several

local municipalities, these prototype systems have been installed at multiple public locations and trials were conducted. Measurements were carried out in continuous operation for several months, and problems such as operational stability, accuracy, and installation were extracted.

Research about Risk Sharing Contracts in the Fields of Tourism and Transport

HIHARA Katsuya

Some relationships between entities in different industries, such as the relationship between airports and airlines, have complex and multifaceted structures in which conflicting relationships and cooperative relationships coexist, are very much interesting from the viewpoints such as contract theory and game theory, etc. In Japan, we have some examples in which regional airports share the risk of route revenue fluctuations with airlines.

Noto-airport Load Factor Guarantee Mechanism (LFGM) Contract (2003-present) is one good precedent. The Ministry of Land, Infrastructure, Transport and Tourism (MLIT) is also considering risk-sharing relationship among airport and airline in deciding the allocations of Haneda Airport slots. Also in many of the concession contracts of the airport, demand fluctuation risk sharing of airport and

airline is taken into consideration (2012-) in deciding landing fee. This study seeks to extend the analysis to a more general context. In fiscal 2021, from the framework of incomplete contract theory, analysis results are obtained about the optimal content of the risk sharing contract that shares the passenger demand fluctuation risk among the concerned parties by a simple linear payment scheme.

Development of methods about regional tourism statistics of data fusion with enhanced resolutions

HIHARA Katsuya, SHIMIZU Tetsuo (PI), OGASAWARA Yu, OHIRA Yuki

Regional tourist destinations need to continuously acquire data on tourism phenomena and evaluations, which will lead to appropriate marketing and resource development. For that purpose, It is necessary to propose a methodology for improving tourism statistics and data with enough resolutions that are particularly useful for narrow-area DMO

measures and business planning. In this research, we specialize in total number of overnight stay data, and combine national tourism statistics, private data company stay population distribution data, Wi-Fi-packet sensor data, etc. and develop a method for estimating the total number of overnight guests by attributes in the

tourist area with the spatiotemporal resolution level as fine as possible. In pursuing this, the measures and business needs of DMO will be thoroughly identified, and the index data and estimation method Porto Folio necessary for the evaluation will be presented.

Research about Factors for the Increase in the Number of Visitors to the Hot Spring Areas

HIHARA Katsuya, OGASAWARA Yu

Hot spring visits are major factor to tourism demand at large. But the number of accommodation users in the hot spring areas has decreased by 13 million since the bubble period. The

number of accommodation facilities also decreased significantly. Various studies have been conducted about the factors causing stagnation in hot spring areas and recommendations for

revitalization. Most of the researches are, however, qualitative about strategies of each hot spring area. The quantitative researches, which investigate factors contributing to

the growth of customers using open data with the possibility to compare among hot spring areas, are very limited. This research attempts a new quantitative analysis of the factors leading to the growth of bathers and guests in 85 hot-spring location municipalities nationwide that have not been analyzed

sufficiently due to data constraints, by utilizing originally estimated data. In addition to familiar factors, like access to the areas, such factors as related to the number of foreign tourists to Japan are taken into accounts. By these analyses, effective measures and factors for attracting more hot spring

customers at the municipality level are expected to be clarified. Supporting researchers: MEDAI Nagi, OKAMOTO Naoyuki

Study of the Asymmetric Structures of Economic Contributions by Tourism across Regions in Japan

HIHARA Katsuya

In the situation before the Corona pandemic, it is reported that tourism has positive impact on the whole country. However, little is known about the details of the economic effects at the regional level. This research focuses on the asymmetry (differences in production,

employment, and investment in the region) regarding the economic effects of tourism on the region. In order to assess whether tourism has a role in mitigating the asymmetry, we intend to assess the impact of tourism on macro-economic variables such as

production, employment and investment. Through this study, it is expected that the effect of tourism in terms of the impacts on asymmetric structures in Japan, thus making meaningful implications to the policy or management practices. Cooperating students: Miho Suzuki, Yuki Kano

Analysis of Impact on Factors to Travel Intentions under Contagious Policies /Technical Change in Tourism Sector

HIHARA Katsuya

We intend to evaluate the impact on travel intention by the COVID-19 pandemic, mainly using samples of residents in Tokyo Metropolitan area. This study is expected to contribute to the evaluation of infection control measures, and also to contribute to the preparation of measures necessary to respond to

other pandemics that may occur in the future. At the same time, we intend to provide useful knowledge to practitioners by quantitatively evaluating the impact of contactless and touchless technologies on the intentions of hotel users. By analyzing social attributes such as age, educational background,

gender, etc., it is also expected to obtain detailed knowledge about the impact of various control measures during the corona pandemic crisis on travel/use intentions for each social stratum. Collaborating researcher: Yuma Takenaka, Dolgion Davaajargal

Research about private lodging service over platformer transactions (Airbnb and others)

HIHARA Katsuya

This research focuses on private lodging services, such as Airbnb, among sharing economy. The web-based platform economy, such as Airbnb, brought about the revolutionary changes to the world, not just in trip arranging services, but also lodging service, real estate rental business. This research studies about numerous preceding academic literatures of the impact of Airbnb on the world

from various disciplines, from management, economics, sociology, information sciences and combine the study results in Japan. By this study, the impact of Airbnb on tourists, hosts of private lodging service, tourism industries, residents in regions, local communities are extracted and aligned, and comparative studies are executed about the methods of evaluations. The

study shed lights on housing space sharing business, which has been steadily on the rise before the pandemic. With all these studies combined and digested in this single study, it is expected for the new challenges facing such housing space sharing services to be outlined for the future researches. Collaborating researcher: YARA Emie

Detection of risks while sightseeing in various places from a huge amount of geotagged tweets

Ibuki Yoshida, Yohei Kurata

applying failure-story-extractor developed by Mr. Yoshida in his bachelor research, to geotagged tweets posted during Golden Week, and conducted an

exercise lecture in which students are asked to visualize failure-story-tweets in each student's hometown. As a result, we were able to detect seasonal

and local risks while sightseeing, such as unexpectedly hot weather during Golden Week.

Relationship between satisfaction degree and dissatisfying elements for each customer type and each accommodation type, a study from a large volume of accommodation reviews

Ibuki Yoshida, Yohei Kurata

Using Rakuten Travel's huge accommodation review data, we created a list of dissatisfaction items (insects-in-room, weak WiFi, etc.) that appeared in the review text, and analyzed the relation-

ship between the dissatisfaction item described in the review text and the overall evaluation score. We analyzed from the viewpoint of (1) facility type, (2) type of guestcompanion, and (3)

price range of the accommodation, and clarified dissatisfaction that each accommodation facility should resolve at first.

Extraction of Regional Issues from a large amount of Geotagged Tweets

Ibuki Yoshida, Yohei Kurata

Based on the hypothesis that geotagged complaining tweets would point out regional issues and should be useful for considering administrative measures. We built a complaints extractor by machine learning technique based on complaint corpus, and applied it to a

large number of geotagged tweets posted in Hokkaido area. Most of the extracted tweets seemed trivial complaints and our expectation that they should be useful was revealed false.

Exploring the interrelationship between virtual and onsite tourism in the museum visit

Wu Lingling, Medai Nagi

To overcome the tremendous impact of the COVID-19 pandemic on the tourism industry, new technologies, such as virtual tourism experiences, are being investigated. This study analyzed the interrelationship between virtual and onsite tourism in the context of museum visits to provide implications for virtual tourism development in the post-pandemic

era. The study examined people's simultaneous choices between virtual and onsite tourism using a bivariate dichotomous logit model. Results suggest that cross-category factors significantly influence both virtual and onsite tourism intention. Furthermore, we confirmed a positive correlation between virtual and onsite

tourism intention. The results suggest that the interrelation between virtual and onsite tourism is complementary rather than a substitute. Implications were derived for tourism destinations regarding how to develop virtual tourism as either a marketing tool or an alternative product.

Analysis of the impact of non-compulsory measures on human mobility in Japan during the COVID-19 pandemic

Wu Lingling, Shimizu Tetsuo

To curb the spread of the COVID-19 pandemic, countries around the world have imposed restrictions on their population. This study quantitatively assessed the impact of non-compulsory measures on human mobility in Japan during the COVID-19 pandemic, through the analysis of large-scale anonymized mobile-phone data. The non-negative matrix factorization (NMF) method was used to analyze mobile statistics data from the Tokyo area. The results confirmed the suitability of the NMF method

for extracting behavior patterns from aggregated mobile statistics data. Data analysis results indicated that although non-pharmaceutical interventions (NPIs) measures adopted by the Japanese government are non-compulsory and rely largely on requests for voluntary self-restriction, they are effective in reducing population mobility and motivating people to practice social distancing. In addition, the current study compared the mobility change in three cities (i.e.,

Tokyo, Osaka, and Hiroshima), and discussed their similarity and difference in behavior pattern changes during the pandemic. It is expected that the analytical tool proposed in this study can be used to monitor mobility changes in real-time during the pandemic, as well as the long-term evolution of population mobility patterns in the post-pandemic phase.

Analysis of the impact of non-compulsory measures on human mobility in Japan during the COVID-19 pandemic

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the current study compared the mobility change in three cities (i.e., Tokyo, Osaka, and Hiroshima), and discussed their similarity and difference in behavior pattern changes during the pandemic. It is expected that the analytical tool proposed in this study can be used to monitor mobility changes in real-time during the pandemic, as well as the long-term evolution of population mobility patterns in the post-pandemic phase.

Development and analysis of uncertainty-based decision-making methods in the tourism and hospitality industry

Yu Ogasawara

Pricing and allocation problems for bundled product in revenue management problem were considered to promote activity services and maximize total revenue in a nested demand structure. The structure is often seen in the tourism and entertainment industries. In this year, additional analysis was

conducted to incorporate the suggestions of experts obtained through peer reviews and conference presentations. Further, a questionnaire survey to find the actual optimal solution was conducted. For the hospitality industry, we analyzed nutritional database of large chain-restaurant menus and

found that the relationship between nutritional balance and price is generally non-linear, specifically concave.

Recovery process of value co-destruction by service provider behavior

Makiko Aso • Mari Okajima

This is a continuing study as service marketing. Given that the relationship between value co-creation and value co-destruction is inextricably linked, research is being conducted on when and how service providers perceive and respond to the signs that value co-creation is moving into value co-destruction.

The research analysed semi-structured interviews with experienced flight attendants, focusing on the in-flight service scene on international flights. The results revealed that there were five items that indicated an aversive response to the risk of value co-creation. Changes in these items over

time represented service providers' risk avoidance and improvement measures. The study argues that, from the perspective of service providers, the potential for value co-creation can be increased by preventing value destruction and avoiding risk by service providers adapting to the diversity of value.

Revisiting the usefulness of upcycling: a circular economy perspective on the service supply chain - a case study of the use of equipment waste by aircraft mechanics.

Makiko Aso • Mari Okajima

Focusing on the circular economy, which is gaining attention due to the growing social recognition of the SDGs, this study examines the practice of upcycling aircraft waste by airlines and aims to identify why and how the niche effect was overcome. The study examines the duality of service, service supply and closed-loop supply chain models. The

results suggest that upcycled products, if evaluated based on customers' own experience and knowledge, evoke historical messages and lead to purchase. In addition, mechanics' enthusiasm for upcycled products may have the effect of improving the service quality of the primary service provider, airline X, through a closer

exchange of customer information within the company and a reverse looping of resources in the service supply chain. Therefore, it was confirmed that this is expected to lead to an improvement in the service quality of airline X.

Shinya NUMATA

Presentation

・成田あゆ、沼田真也、荒木希和子、宮脇成生、鈴木牧、上野裕介 私たちの考える理想のキャリアパス：会員アンケート調査 日本生態学会第70回 オンライン 2023年3月

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Takaaki NIHEI

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Takeshi OSAWA

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Tetsuo SHIMIZU**Presentation**

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Shimizu, T.: A study on how tourist destination should introduce new technologies to user services and business efficiency, 37th Annual Conference of the Japan Institute of Tourism Research, Kanazawa, December 2022. (in Japanese)

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Susumu KAWAHARA**Presentation**

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Yu OKAMURA**Presentation**

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03 Research Summary

3-2. Regional and Urban Planning Unit

02

Yuki OHIRA

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Tomoyuki MASHIKO

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Norie HIRATA

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Kenro AIHARA**Presentation**

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- 西本 海生, 相原 健郎, 神門 典子, 莊司 慶行, 山本 祐輔, 山本 岳洋, 大島 裕明, 位置情報を用いたビンゴゲームによる共通点を持つ展示物の推薦, 第15回データ工学と情報マネジメントに関するフォーラム DEIM2023, 2023年3月
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- Kenro Aihara. 2022. Understanding Intra-Regional Flow of Vehicles Using Automatic License Plate Recognition, Distributed, Ambient and Pervasive Interactions. Smart Environments, Ecosystems, and Cities, Springer International Publishing, pp.127-138

Katsuya HIHARA**Presentation**

- Hihara, K., "Analysis of a Platformer Economy with Network Externalities: A Pathway to a Sharing Economy," Proceedings (on-line) of the World Conference of Western Economic Association International, 2022.07
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- Medai, N., Okamoto, N., Ogasawara, Y., and Hihara, K. "Factors contributing to tourism demand at major Japanese hot springs", PLOS ONE 17(9):e0274681, 2022.
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- Hihara, K. 2022年 6月 . "The Recent Development of Climate Change Mitigation in Aviation Sector". In: Chen et al. (ed) Handbook of Climate Change Mitigation and Adaptation 3rd ed., Springer, Switzerland, P 489-523. Editors Wei-Yin Chen, Maximilian Lackner.

Yohei KURATA**Presentation**

- Reiji Yamagishi, Yohei Kurata, Evaluation of induction of serendipity while sightseeing, by destination-lottery-system, the 23rd Conference of Society For Tourism Informatics, Nagasaki Prefectural University, March 2023
- Ibuki Yoshida, Yohei Kurata, Relationship between satisfaction degree and dissatisfying elements for each customer type and each accommodation type, a study from a large volume of accommodation reviews, the 23rd Conference of Society For Tourism Informatics, the 23rd Conference of Society For Tourism Informatics, Nagasaki Prefectural University March 2023

- Kennichiro Hori, Shohei Suzuki, and Yohei Kurata, Report of Current Situation of videos provided in YouTube channels of Regional Tourism Associations -Comparison of Surveys in 2017 and 2023-, the 23rd Conference of Society For Tourism Informatics, Nagasaki Prefectural University, March 2023
- Yohei Kurata, Enrichment of Virtual Tours in Tokai Area by inter-university collaboration and Induction of viewers' looking-around behavior in Virtual Tours, pp.41-44, the 9th Regional Meeting of Society for Tourism Informatics-Tokai, Atami, February 2023

Wu Lingling

Presentation

Nagi Medai, Lingling Wu, 博物館バーチャルツアーと実際の訪問行動の相互関係についての研究, 第 37 回日本観光研究学会全国大会

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Yu OGASAWARA

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Yosuke Yamamoto, Kimitoshi Sato, Yu Ogasawara, Tourism supply chain, The 22nd Asia Pacific Industrial Engineering and Management Systems, 2022/11/07.

Yu Ogasawara and Kimitoshi Sato, Optimal Bundling Strategy for Nested Service Demand, The 22nd Asia Pacific Industrial Engineering and Management Systems, 2022/11/08.

Yu Ogasawara and Kimitoshi Sato, Revenue Management on Bundle Tickets in Peripheral Regions, Conference on Japan Institute of Tourism Research, 2022/12/18

Yu Ogasawara, Ward's method for interval-valued data and its application, The Operations Research Society of Japan Stochastic optimization and its applications workshop, 2023/01/27

Yu Ogasawara, Yukiko Asamuma, Masashi Kashuya, and Yuki Soma, Relationship between nutrient balance and prices for restaurant menus, The Operations Research Society of Japan Healthcare of operations research workshop, 2023/02/04.

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Ogasawara, Y. (2022). New seasonal measurement with stability and clustering seasonal patterns: A case study in Japan from 2011 to 2019. Plos one, 17(4), e0267453.

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Makiko ASO

Presentation

Aso, M and Okajima, M. Oral Session: Recovery process of value co-destruction by service provider behavior, Japan Marketing Academy Conference 2020, In HOSEI University, October 2021.

07 Awards and Honors



7-1. Environmental Management Unit

name	title
Takaaki NIHEI	Best Paper Award, The Hokkaido Geographical Society, June 2022.
Yuki Sakamoto	Leading Scientist of the Faculty of Urban Environmental Sciences, Tokyo Metropolitan University, January 2023

7-2. Regional and Urban Planning Unit

name	title
Tetsuo SHIMIZU	2021 TMU Best Teaching Award, Development of project-based learning program on regional tourism promotion, September 2022. Specially Seleted Paper, Journal of Information Processing, on "Attention-based Contextual Multi-View Graph Convolutional Networks for Short-term Population Prediction", January 2023.
Susumu KAWAHARA	Yu OKAMURA, Susumu KAWAHARA, Yuki OHIRA, Tetsuo SHIMIZU, "Tokyo Metropolitan University Best Teaching Award 2021 "Implementation of Project-Based Learning in collaboration with local companies and organizations"
Yu OKAMURA	Best Teaching Award, Tokyo Metropolitan University 2021, 'Implementation of Project-Based Learning in collaboration with local companies and organisations' (representative).
Yuki OHIRA	Best Teaching Award 2021, Implementation of Project-Based Learning (PBL) in collaboration with local companies and organizations, Awarded by Tokyo Metropolitan University, 2022. Specially Selected Paper, Awarded paper title:Attention-based contextual multi-view graph convolutional networks for short-term population prediction, Awarded by Information Processing Society of Japan, 2023.
Tomoyuki MASHIKO	AIJ Young Researcher Award 2022 for the peer-reviewed paper entitled "The mutual relationship between established process of reconstruction governance and implemented process of reconstruction project - A focus on LAquila City 10 years after the Abruzzo Earthquake – "by Architectural Institute of Japan, September, 2022. The Yamada-Kazuie Award 2022 for the doctoral dissertation "Establishment of Co-Editing Planning in Post-Quake Reconstruction of Historical Center in Italy" by The Maeda Engineering Foundation, June, 2022. Promising Young Researcher Award for the doctoral dissertation "Establishment of Co-Editing Planning in Post-Quake Reconstruction of Historical Center in Italy" by The City Planning Institute of Japan, June, 2022.





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