

Symposium on

**The International Student
Education Program**

Collaboration with

**Pakistani
Alumni**



Symposium on The International Student Education Program 2022

Collaboration with Pakistani Alumni

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Preface

The International Student Association in Civil Engineering (ISACE) is an official student organization for international students at the University of Tokyo, Department of Civil Engineering. This was established on March 11, 2011, in the aftermath of the Great East Japan Earthquake, to promote togetherness and improve the safety of international students. This organization has been effective in bridging the gap between the department and students by organizing a variety of activities and events aimed at making students' lives easier and more fun. ISACE has hosted a variety of events, including a welcoming party for incoming students, field trips, and an international student symposium. ISACE's international student symposium has remained a major event over years.

It's a matter of immense honor to hold the symposium entitled "Symposium on International Student Education Program 2022: Collaboration with Pakistani Alumni" on March 3, 2023, in a hybrid manner this year; as the Covid-19 situation has eased globally. International students, including graduates from the Civil Engineering Department, took part in the discussion of the international student education program at UTokyo and shared their treasured experiences. "FSO Update11 (Symposium Booklet)" is a publication that contains the enlightening thoughts and experiences shared throughout the symposium.

We would like to express our sincere gratitude to Prof. Takashi Fuse (Chair, Department of Civil Engineering) for his opening remarks and Prof. Daisuke Fukuda for introducing brief highlights of the International Student Education Program. We appreciate Ms. Yuriko Onishi from Ministry of Education, Culture, Sports, Science and Technology (MEXT), Mr. Koichi Kato from Japan International

Cooperation Agency and Mr. Hiroki Kasahara from Asian Development Bank (ADB) for sharing their interesting thoughts and we would like to extend our deep gratitude for the support these institutions provided for international students in Japan. We would also like to extend our sincere thanks to Prof. Dawen Yang for his insightful talk at this occasion. It's a matter of great pleasure to hear about the Pakistani alumni community from Prof. Dr. Khalid Farooq, Mr. Amad Ud Din and Dr. Atta e Mustafa. We also like to thank the participating students Muhammad Husnain Aslam, Arslan Khalid and Ali Naqi for sharing their research as well as general life experience here at UTokyo.

Furthermore, we appreciate Asst. Prof. Daniel del Barrio Alvarez for leading the panel discussion. We express sincere thanks to Prof. Eiji Hato, Executive Committee Member, Department of Civil Engineering for his valuable closing remarks. We could not miss expressing our sincere gratitude to Prof. Koi Yoshimura for coordinating and facilitating the whole symposium.

Finally, we'd like to express our gratitude to Civil FSO's Abeki-San and Tonegawa-San for their efforts, support, and continual direction, without which we would not have been able to publish this magazine.

With Sincere Regards,

Zainab Farooq
Krittanaï Sriwongphanawes
Kenny Colin Tengsejing
Sothyarak Rath
Manazir Hussain

From the Chair of Department

Prof. Takashi Fuse

Chair of Department



On behalf of all the faculty members of the Department of Civil Engineering, School of Engineering of the University of Tokyo, I would like to give brief remarks.

Firstly, I am very happy that the symposium organized by the international students this time is a hybrid, but it is the first in a long time that included face-to-face meetings.

Secondly, I would like to give a brief background of this program. This international program is established in 1982, including English-based graduate school education, Japanese language education under a unique system, and a well-developed support system and international network. The program aims to realize integrated education for international and Japanese students, support diverse career paths for international students, and the production of human resources who can contribute to the industry. So far, we have accepted more than 1,400 international students from more than 70 countries around the world. Among them, nearly 80 students from Pakistan have been accepted. Especially in the last few years, we have focused on enhancing integrated education for international and Japanese students, improvement of education and support for students before and after their arrival in Japan by utilizing the distance system, extension of Japanese language education, expansion of internship programs, increasing increasing opportunities for employment in Japan, active collaboration with corporate projects, upgrade PDCA cycle through inclusive program management items to integrate online and offline programs effectively.

Thirdly, I would like to express our sincere gratitude to all the organizations and individuals who have supported our international student education program such as the Ministry of Education, culture, sports science and Technology (MEXT), and the Asian Development Bank (ADB), Japan International Cooperation Agency (JICA) etc. Your supports in various aspects are essential to continue our successful international student education program. I would also like to thank the guests.

This symposium aims to report on the activities of our international student programs and current students, as well as introduce the efforts of programs at other universities and the activities of our graduates. I would like to express my sincere appreciation to Prof. Dawen Yang from Tsinghua University, Prof. Khalid Farooq from the University of Engineering and Technology, Lahore, Mr. Amad Ud Din from TOA corporation, Dr. Mustafa Atta from CTI Engineering International who will give us important insights, keys, and ways forward for our future improvement of the program, at this Symposium.

Finally, I would like to thank you organizers of this wonderful symposium and I wish you, all the participants, a fruitful and productive symposium.

Thank you for your attention.

Part 1: Current Direction of International Student Education Program

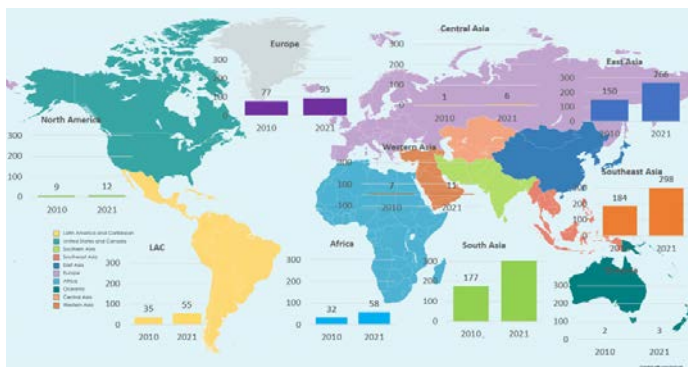
The Overview of the International Graduate Program

Prof. Daisuke Fukuda
 Foreign Student Officer



The International Graduate Program (IGP) has a long history in the Graduate School of Engineering for over 40 years. Since its establishment, more than 1,400 students from more than 70 countries worldwide have graduated from our program. In addition, more than 100 international students from over 20 countries are in this program yearly.

In 2022, 25 new students were selected from over 200 applications to enroll in this program. Among them, the two most significant shares of students came from South Asia and East Asia. This evidence reflects that most international students are from South Eastern Asia. Nevertheless, students from other parts of the world, such as European, African, and Australian students, are also accepted.



The uniqueness of the IGP consists of seven aspects. First, the program is well-established with many supports. The IGP has been receiving financial support, in terms of scholarships, from numerous stakeholders: Japan Ministry of Education, Culture, Science, Sports, and Technology (MEXT), the Asian Development Bank (ADB), Shimizu Corporation, Ueda Memorial Foundation Scholarship, and Japan International Cooperation Agency (JICA).



Second, the IGP opens opportunities to international students with the non-requirement of a Japanese language skills program. Japanese language skills are not mandatory, as all the lectures at the Graduate School of Engineering are in English. Nevertheless, students can learn Japanese through the Japanese Language Class provided by the civil engineering department. In addition to Japanese, academic English courses taught by professors are also available for students who are not native English speakers to improve their English skills.

Third, the IGP also receives rich support from other sources, mainly contributed by the host family program and the alumni associations. There are many activities held to encourage interaction among international society. For example, parties and online meetings are created for international students and their families to communicate with the host families, and field trips are held for students to gain new experiences.

Fourth, the IGP is collaborating with many industries to provide students with extensive job opportunities in civil engineering. Job seminars dedicated to international students are held annually for students interested in working in Japan. In addition, the program also provides the opportunity for overseas internships.

Fifth, while receiving many international students, the IGP is also extending its academic network to the rest of the world. For example, we have sent professors and young researchers to Vietnam Japan University (VJU) to exchange knowledge. We also collaborate with Ecole Nationale Des Ponts et Chaussees (National School of Bridges and Roads) in France.

Sixth, the IGP has an efficient application system for overseas applications called "T-Cens". The application system was established and used only by the civil engineering department in the past. However, it has become common for all engineering schools at the University of Tokyo.

Seventh, the IGP is establishing a global human network with alumni working and studying around the world. The network extends to not only overseas universities but also international companies. Moreover, it is not limited to alumni from the University of Tokyo to encourage diversity in the network. Students with various kinds of backgrounds are also accepted.

The uniqueness mentioned above makes the IGP a successful and sustainable program. Nevertheless, it must be evaluated and improved regularly to maintain its sustainability. Thus, the so-called “PDCA cycle” is adopted for maintaining the IGP. The Symposium on the International Graduate Program is held annually to create a space for the stakeholders to evaluate and give their opinions on the program as the “check” step of the cycle.

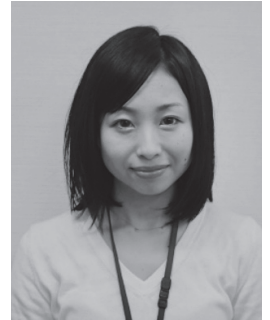
In conclusion, the IGP has been successful for a long time. The Department of civil engineering at the University of Tokyo has been developing this program for many years through strategic planning, regular monitoring, and evaluation process. The department staff and alumni also play an essential role in managing the program. Last but not least, one of the main reasons is the support from numerous donors and industrial companies. We are very grateful for all the help that led this program.



Greetings from Donors

Ms. Yuriko Onishi

Unit Chief, Student Support Division,
Higher Education Bureau
Ministry of Education, Culture, Sports, Science and Technology (MEXT)



On behalf of the Ministry of Education, Culture, Sports, Science and Technology (MEXT), I would like to make a few remarks on this splendid occasion.

First, I wish to express my highest regards to Prof. Takashi FUSE, Prof. Daisuke Fukuda and all the staff for their enthusiasm and efforts in organizing and holding this symposium.

I feel delighted and privileged to know that several participants are joining the symposium from outside Japan.

At last Japan's measurement for Corona virus have been eased, but both the number of inbound and out-bound students have dropped significantly.

Due to the intensifying global competition, the emergence of worldwide problems, and changes in the international situation, higher education institutions are facing challenges in globalization more than ever. In addition to this situation, Japanese society is experiencing a rapid population decrease as well. As a consequence, accepting excellent students from all over the world is essential.

Considering the current situation, Ministry of Education, Culture, Sports, Science and Technology (MEXT) is implementing various measures, to promote the internationalization of universities, including strengthening both the acceptance of international students, and sending Japanese students, as well as supporting international collaboration with overseas universities, while ensuring the quality of education. Most recently, to recover the number of international student exchanges, which have drastically decreased due to the influence of Covid-19, MEXT published last July the "Direction for Globalization of Higher Education Policies in Japan" to indicate the further directions for policies in this respect.

We set the directions for the policies, aiming for restoring the number of the international students coming to Japan, and Japanese students studying abroad to pre-Covid-19 level by 2027, which is 5 years from now. We, as a government, will continue to make every effort to ensure that motivated students do not stop learning, and interacting with each other, over national borders.

The world today faces many global problems that cannot be solved by a single country alone. We are living in an era in which each of us as a global student, must think and act, not only for the benefit of our own country, but for the world.

Under such circumstances, collaboration and co-education across national borders are more important than ever. Thus, I have great expectations from initiatives like today's, by the University of Tokyo. In addition, even though the effect of Covid-19 still lasts, compared to 3 years ago, when I first addressed this symposium, student exchange is returning, and online-based learning is also advancing, like never before.

Finally, I would like to take this opportunity to praise all the students who have never given up on continuing to learn, and all the faculty and staff members, who have supported their learning under anomalous circumstances.

I also would like to thank all those involved in organizing this symposium and the speakers from overseas for their efforts, and I do hope that today's symposium will bring about new insights and further deepen the interactions among students and universities that have taken place thus far. Thank you very much.

Mr. Koichi Kato

Director, University Partnership Division
Domestic Strategy and Partnership Department
Japan International Cooperation Agency



Greeting

Thank you, Professor Kei Yoshimura. First of all, I'd like to extend my sincere gratitude to the organizers of the symposium for generously providing JICA an opportunity to make this greeting speech, and also for other donors in this context, the MEXT, and the ADB, for usual cooperation with JICA.

Achievements of JICA

JICA, as an implementing agency of Japanese ODA, has been carrying out the program of long-term training, since 1999 with the preparation of eminent Japanese institutions, such as the University of Tokyo. Currently, we welcome more than 1,000 participants per year, from more than 19 countries. At this moment, roughly speaking, 1,600 JICA scholars are trying to get their degrees, at their host universities. Among that, 33% from Southeast Asia, 24% from Africa, and 18% from South Asia, including Pakistan, the participants from these three regions consist 75% of the total participants. 70% of them are administrators of government, 20% are from university and research institutions. The rest can be from private sector. About 80% of JICA participants are there for master's degrees, and the rest is for doctorate degrees.

JICA-UTokyo connection

With regard to the Department of Civil Engineering, Graduate School of Engineering, the University of Tokyo, we have in total, 12 participants of our long-term training, 7 from what we call IITH program, three from Road Asset Management program and two from SDGs program. For that, I would like to once again thank for the continuous efforts of professors and secretariats of the University of Tokyo for their collaboration with us.

With their collaboration, we will continue to implement those programs by welcoming more participants. And also, we have about 30 other programs of long-term training in different fields. So, I hope we'll have more opportunities for the future collaboration. And for your information, in JICA also, we have alumni associations in each country. So, I hope some of you participating in today's symposium will be interested in participating in those JICA alumni associations.

Thank you very much for having JICA with this symposium. Thank you very much.

Mr. Hiroki Kasahara

Principal Financing Partnerships Specialist
Partner Funds Division
Sustainable Development and Climate Change Department
Asian Development Bank



Greetings

Thank you very much Yoshimura-sensei, good afternoon to all guests and participants. As ADB-Japan's Scholarship Program Coordinator, it is my pleasure to be invited again, to this symposium, organized by the Department of Civil Engineering, University of Tokyo.

Achievements of the ADB-JSP over the Last 30 years and University of Tokyo's alignment with ADB-JSP's Policy

In the last 34 years, the ADB-Japan Scholarship Program has given opportunities for more than 4,000 highly qualified youth, from 37 of ADB's developing member countries, to undertake graduate studies in areas covered by ADB's long-term strategy, and Japan's offshore development assistance.

In light of the changing global socioeconomic landscape, we revisited ADB-JSP's policy in 2021, during the Covid-19, to further align the fields of the study to ADB's operational priorities and the government of Japan's development priorities. Broadly speaking, these are in the following sectoral clusters of rural development and environment, and public management, and human development, and infrastructure.

I'd like to emphasize that UOT's Department of Civil Engineering course is fully aligned with the ADB-JSP's policy priorities, in terms of fields of studies. It is worth mentioning that UOT as a whole, has been one of our partner universities since 1980. Our longstanding cooperation produced 517 scholars, which is second to the highest among all of our 25 partner universities. By the way, 15 of 25 universities are in Japan under our program.

We support five schools here at the University of Tokyo. Currently, we have 37 scholars passing their studies in UOT. ADB-Japan Scholarship Program scholars at UOT, are privileged to be able to study alongside some of the best and brightest students, with some of the best professors in one of the best universities in the region.

Our Hope for ADB-JSP Scholars

I do hope that they will value this privilege and the connections and network that they will build. In a year or two, as they return to their home countries, I'm convinced that they will be better prepared with new skills and knowledge, to contribute to their country, particularly in these very challenging times after the health crisis, or even the climate change crisis, etcetera.

ADB-JSP's Pakistan Connection

Before I close, I'd like to talk about ADB-JSP's Pakistan connection. We have more than 3,900 alumni, of which 267, or 7% are scholars, or alumni from Pakistan, putting it at the top-six participating developing member countries of ADB. The Executive Director for Japan will host dinner tonight, exactly tonight, in Lahore, for the Pakistan alumni of JSP, to further exchange, build, and promote cross-relations among the alumni.

We continue our efforts to strengthen our network with alumni from Pakistan, as well as other countries, by inviting them to ADB-JSP events, including ADB-JSP symposium, or other ADB knowledge events, and alumni gatherings.

Appreciation to UOT as Partner Institution

Let me end my message by expressing our appreciation to UOT. As our longstanding partner, we thank you for your valuable cooperation. We are confident that at the UOT, ADB-Japan Scholarship Program scholars, together with the other students, have the best environment to nurture their potential, and help achieve their personal, and professional growth, while we at the ADB-JSP will continue to make our efforts to be a key partner in the development of Asia, and the Pacific.

Once again, thank you very much, and have a very meaningful symposium, today.

Short Talk from Students: Message from the ISACE Committee

Ms. Zainab Farooq

President, ISACE (2022-23)
(M2 Bridge & Wind Engineering Laboratory)



Greetings! I am honored to represent the International Students' Association in Civil Engineering (ISACE) at the auspicious occasion of the Symposium on International Student Education Program, 2023 and would like to take this opportunity to share with you some insights into our organization.

ISACE was established as the first official platform for international students after the March 11th Great East Japan Earthquake. Our primary objective is to bridge the gap between international students and the Japanese community, and to enhance their graduate student life by providing opportunities for communication, engagement, and enjoyment. We believe in providing a comprehensive platform for international students in civil engineering, ISACE facilitates a myriad of opportunities to Inform, Supplement, Assess, Connect, and Enjoy.

At ISACE, we are committed to organizing a diverse range of events including Welcome Parties, Alumni Discussion Forums, Symposiums, Field Trips, and other informal activities like Movie Nights, Walking Trips, International Lunch Parties, and Online Magazine Publications. Our events are intended to promote cross-cultural exchange and provide a forum for networking and knowledge-sharing.

Our committee is comprised of international students from diverse backgrounds, and we work closely with professors and the Foreign Student Office (FSO) to execute these events. Our committee members hold responsibility for organizing events and communicating with stakeholders, including students, professors, alumni, and other universities. ISACE Executive Committee Members for 2022-23 are Zainab Farooq (Pakistan), Krittanai Sriwongphanawes (Thailand), Kenny Colin Tengsejing (Indonesia), Sothyarak Rath (Cambodia), and Manazir Hussain (Pakistan).

Last year, due to the Covid-19 pandemic, most of our events were held online, including the Welcome Party, Alumni Talks, and Symposium. However, this year, we are pleased to have organized our first in-person event, welcoming students to the University of Tokyo in October 2022. Additionally, we recently organized a Field Trip to Yamanashi Prefecture, visiting various locations such as Arakawa Dam, Numazu Deep Sea Aquarium, Mishima Skywalk, and Mount Fuji followed by this year's Symposium on International Student Education Program (collaboration with Pakistani Alumni).

In conclusion, ISACE is a vibrant and dynamic organization that promotes cultural diversity and student engagement which looks forward to continuing efforts to enhance the graduate student life experience and to provide opportunities for cross-cultural exchange. I wish more power to ISACE in years to come. Thank you!

Short Talk from Students: Research Life at UTokyo

Mr. Aslam Muhammad Hasnain

Student (D2 Yoshimura Lab, Spring GX Scholar)



Hello everyone. Good afternoon, I am Hasnain, a second-year Ph.D. student from Yoshimura Laboratory. I did my master's in civil engineering from the University of Tokyo, in the department of Civil Engineering, and now I am continuing my Ph.D. degree in the same department. I got my bachelor's degree from National University of Sciences and Technology, in Pakistan.

Today, my talk is focused on highlighting the activities as a graduate student that is covering my motivation of choosing this program. Why I chose this program? It was based on the nature of my job, which I was doing in the industry, and the type of work that I'm doing at UTokyo. While working in the industry, I was a part of team, which was responsible for providing solutions to unattended issues in Pakistan. My tasks were related to hydrology, remote-sensing, and soil-water interaction.

And what was my attraction to the Department of Civil Engineering? It was based on some factors that are: I was already familiar with the cultures, norm, and the quality of education in the Department of Civil Engineering. There were some features of the department, such as department's curriculum aligns with my academic goals, learning from renowned experts in the field, engaging in cutting-edge research, global perspective, and cross-cultural communication skills, and to enhance the career prospect.

Now, I want to quote some examples of my career prospects. After doing my master's from the Department of Civil Engineering, I had an opportunity to work on World bank funded project (in the industry) on the erosion-susceptibility mapping of Tarbela Dam watershed in Pakistan. The project achievements were appreciated by national and international experts of the field. Moreover, the industry nominated me to deliver the training lectures to multiple stakeholders in Nigeria. These trainings were mainly related to reservoir sediment management.

The department, and also the laboratories in this university, provides various supports in academic, and daily life, such as department's facilitation in online applications, organizing online classes during the Covid-19 pandemic, assigning tutor to handle various issues, the financial support for educational and living expenses, educational trips, and others i.e., Japanese language class, host family programs etc.

Finally, I want to briefly discuss about my current research work. I am doing research related to sediment transport in global rivers, under changing climate and anthropogenic influence. I am using CaMa-sediment model, which has been developed in 2020 in Yoshimura Lab (in the University of Tokyo). This model uses river hydrodynamics from CaMa-Flood. A schematic of sediment dynamics in each grid cell of the sediment model has been shown in Fig. 1. Where; ers is erosion from the catchments, Q_s, Q_b are the suspended and bed load discharges, S_s, S_b represents the suspended and bed load concentrations. My major objective in this research is to enhance the capability of CaMa-Sed, by building and incorporating a new module/subroutine for sediment trapping in dams.

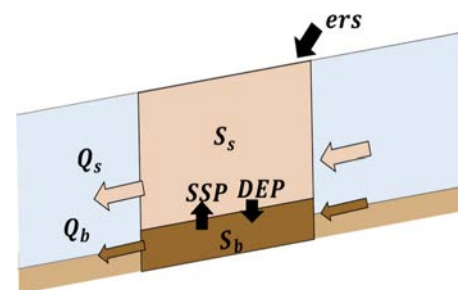


Fig. 1 Schematic of sediment dynamics in each grid cell of the model

Figure from 2A to 2D below, gives a glimpse of current performance of our sediment model. Figure 2A displays the geographic locations of river mouths, with the size of the circles indicating the amount of simulated sediment transfer. In Figure 2B, a scatter plot comparison of observations and simulations is provided for all river mouths located in Figure 2A. Figures 2C and 2D illustrate the intra-annual variability of observed and simulated sediment flux, respectively, for large rivers.

This is all from my side today. Thank you very much for listening to me.

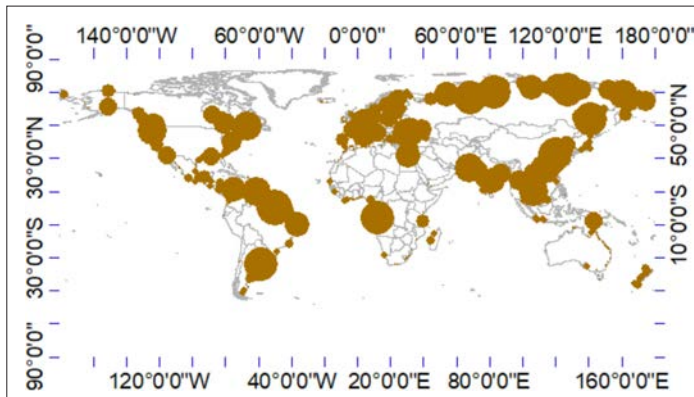


Fig. 2A Simulated Sediment Flux at river mouths

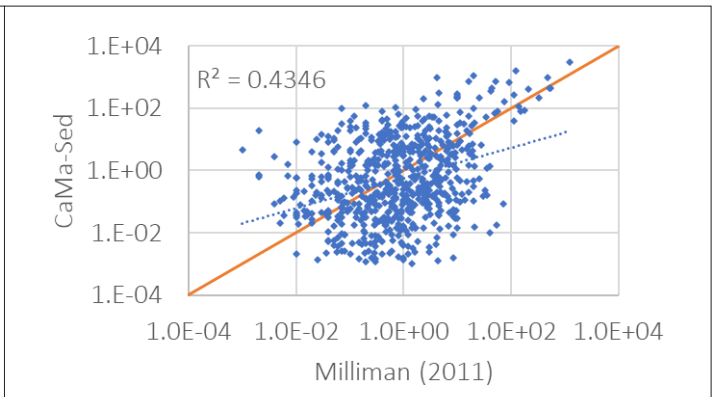


Fig. 2B Comparison of Sediment flux at river mouths

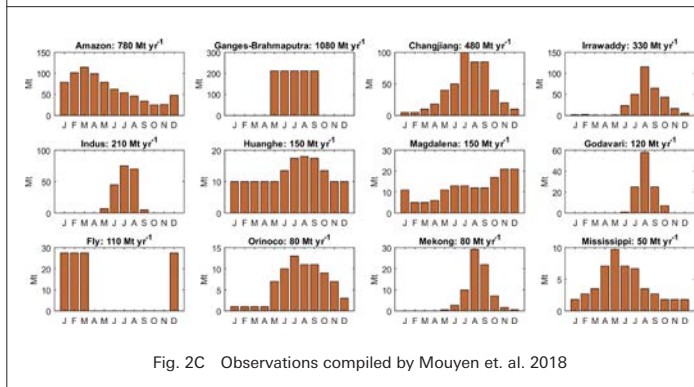


Fig. 2C Observations compiled by Mouyen et. al. 2018

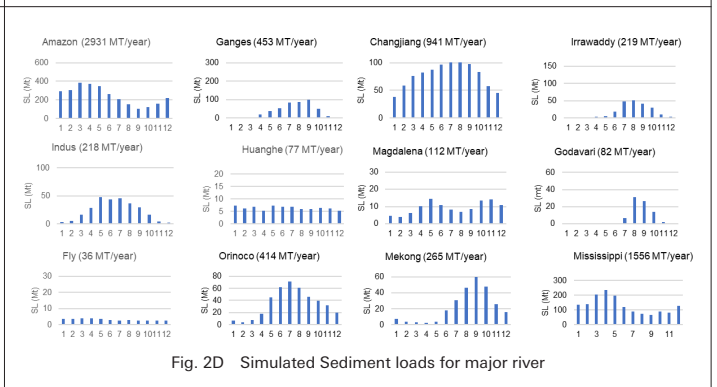


Fig. 2D Simulated Sediment loads for major river

Short Talk from Students: My Life Journey in Japan

Mr. Arslan Khalid

Student (M2 Maemura Lab, MEXT Scholar)

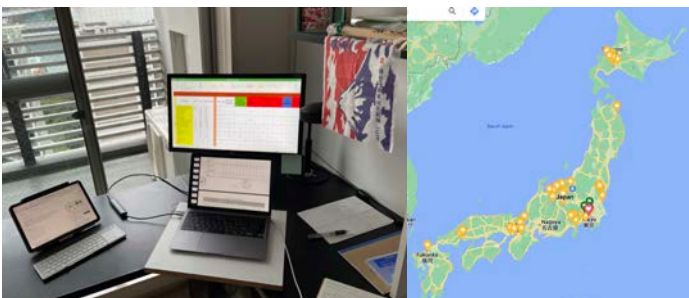


I am Arslan Khalid, M2 student from Construction Management and Infrastructure Systems Lab. I finished my master's defense, and submitted my master's thesis, back in January, and I'll be graduating on 23rd of March. I graduated from University of Engineering and Technology, back in 2018. One of the motivations for me to join UTokyo was that two of my undergrad teachers, who were also my supervisors in my final project, and both are alumni of UTokyo.



After graduation, I joined the Jagran-II Hydropower Project, which is located in Kashmir as a planning engineer. I worked there for 3 years, and was introduced to the field of project management. Since I was part of a project management team, I had the opportunity to closely work with all the stakeholders. From there, I got the exposure of this field, and then, I applied to University of Tokyo, and finally, I arrived in Japan in, 2021.

My life in Japan, is mainly consisting of the thing that I'll be showing now. First of all, is study. And I chose this specific photo for study, as you can see, multiple screens open, and that shows that when we are studying here, we are getting so much information from so many professors, in so many courses, and we have to manage all of that. I think that's true in all the universities, but at University of Tokyo, the academic standards are quite high, and so we have to meet those. So, it's a stressful experience, but at the same time, it's an adventurous, and great experience.



I've also done, I would say, significant traveling. I've almost covered the entire length of Japan, although I've missed some spots there, but can't cover that now because I'll be traveling back to Pakistan soon. After that is food, which is very important for me because I love to eat.



When I came here to Japan, one of the problems was the availability of halal food because I'm Muslim, and we have that restriction. So that's why I had to cook myself and trust me, that when I made my first fried egg in Japan that was the first fried egg of my life, and after that, I started cooking, and I started loving it. Now, often, I send pictures of my cookings back home to my family, and they're like, "Okay, when you're coming back, you're cooking that food for us." And also, I did not only rely on my cooking skills, I also enjoyed Japanese delicacies a lot. I think, I've almost eaten all the Japanese food, which are available in halal versions. There are like some, a few images of that.



I have had a quite active social life in Japan, from the gatherings with lab mates, to lunch and dinner get-togethers with my host family. Tsuka san also kindly arranged a visit for me, and some of my Pakistani friends to visit the Taisei Research Center. I also happened to visit the High Energy Accelerator Research center in Tsukuba, I guess I'm quite proud that I climbed Mount Fuji, and I have also been the president of Pakistan Student Association – Todai (PSAT).



ment may or may not be required to pay fees, based on the circumstances, which is uncertainty, and agreed upon contracts, and uncertainty always unfolds with time.

**Evaluation of the use of a Flexible Management Approach;
 A Real Options based Analysis of a PPP Toll Road Project in Pakistan**
 Supervisor: Dr. Yu Maemura | Co-supervisor: Dr. Riki Honda



Finally, I'll briefly speak about my research here. My research was about, evaluation of the use of a flexible management approach, and real options-based analysis of a PPP toll road project, which is in Pakistan. That toll road project is the Swat Expressway, and that project is basically, financially unviable project, as per the standard approach of net present value analysis for project valuations and that financial unviability can also be seen in the financial model there. As you can see there, 50% of the funding is coming from government, and 50% is coming from the private sector. Although, this project was executed on a build-operate-transfer model, where the private sector is responsible for delivering the project, and for arranging all the funds, but 50% of the funding was given by the government sector because it was financially unviable. I took a different approach for the project valuation, an approach based on flexibility, and that flexibility is introduced by real options analysis, and the results of those analysis depict that if we change the way we look at the projects through project valuation, we can incorporate flexibility. The results of my research show that if we incorporate flexibility, the government does not have to pay 50% of the project fee, upfront. There will be a flexibility in the system, and the govern-

Financial Model		
Land Acquisition Cost	PKR 6.890 billion	Fixed management approach which does not incorporate uncertainty
Total Project Cost	PKR 34.165 billion	
PKHA Equity (Provincial VGF)	PKR 11.5 billion	
Provincial Support (Loan)	PKR 5.5 billion	
Sponsor Equity	PKR 8.329 billion	
Commercial Lending	PKR 8.264 billion	

50% (Government Sector)
 50% (Private Sector)

Real-Options based Project Valuation:

- Incorporates uncertainty
- Revenue floor & ceiling & sharing mechanisms
- Flexibility in financing the project

Short Talk from Students

Mr. Naqi Ali

Student (D2 Kuwano Lab, MEXT Embassy Scholar)



Good afternoon, everyone. My name is Ali Naqi and I'm a second-year Ph.D. student at Kuwano Lab in IIS, University of Tokyo. Today, I'll be sharing some information about my background and research work.

I received the MEXT Scholarship from the Embassy of Japan in Pakistan in August 2018 and came to Japan in September 2019. I completed my bachelor's degree at the University of Engineering and Technology, Lahore, Pakistan, from 2013 to 2017. Then, I worked for two years before pursuing my master's in geotechnical engineering at the Geotech Lab from 2019 to 2021. Currently, I'm continuing my research in geotechnical engineering at Kuwano Lab.

During my professional career, I worked as a geotechnical engineer at Birudo Engineers Company, established by a University of Tokyo alumnus, Dr. Muhammad Irfan, from 2017 to 2019. There, I conducted fieldwork, laboratory testing and design work. My experience at Birudo Engineers Company inspired me to pursue my education in geotechnical engineering at the University of Tokyo and apply for the MEXT scholarship.

My research focuses on studying the mixing phenomena inside the Earth Pressure Balance Shield Tunnel Machine. I'm using DEM simulations to investigate the mixing process, and I've defined a new parameter called the degree of mixing to check the degree of mixing. I divided the specimen into 100 equal grids and calculated the number of type one and type two particles in each grid. The degree of mixing is highest if the number of particles of both types is almost equal. I've observed the mixing of the soil at different rotation speeds.

Apart from my research work, I've participated in many activities in Japan, such as kimono-wearing, visiting the Embassy of Pakistan in Japan, and visiting places like the Yushima Shrine with the JLC group. I also participated in Mochitsuki and enjoyed Halloween in Japan. I've also participated in field surveys and site visits with my lab group, and we were the champions of the Okamura Cup in 2021. Our lab also organized parties such as Farewell Party and Welcome Parties, and we have a strong network of Pakistani students under the umbrella of PSAJ, where I served as the President.

Thank you for listening to my presentation.

Part 2: Invited Lecturers from Alumni

Tsinghua University: Past, Today, and Future

Prof. Dawen Yang

Tsinghua University



Around 30 years ago, I was a student at "Todai Doboku." I finished my Ph.D. in 1998 and returned to China in 2004, where I worked at Tsinghua University, Beijing, China. The civil engineering department at Tsinghua University was founded in the 1930s and is deeply rooted in China's engineering demands as it presents reforms for cultivating talents of the new era. In this opportunity, I would like to share the history, the present, and the future of Tsinghua University with you.

The campus of Tsinghua University is in the northwest of Beijing, on the site of the former imperial gardens called "Qinghuayuan." It was established in 1911 and was molded into a polytechnic institute focusing on engineering in the 1950s. After China opened to the world in 1978, Tsinghua University became a comprehensive research university. The university has around 21 schools and 59 departments in science, engineering, humanities, law, management, and art.

The motto of Tsinghua University, "Self-discipline and Social Commitment," initially came from the Holy Canons of Confucianism. An early educator and thinker at Tsinghua University, Liang Qichao, 1914, encouraged the Tsinghua University students to become persons of noble character with self-discipline and social commitments. Thus, the philosophy of education at Tsinghua University combines traditional Chinese philosophy and wisdom with modern science and global culture.

In 1926, the department of civil engineering was established, and 46 years later, in 1972, the department of hydraulic engineering, where I am now working, was separately established as another department. After that, in 2000, they joined the school of civil engineering. In 2005, we were evaluated against other universities in China, and we were ranked number one. Also, in 2017 and 2018, according to the QS Ranking at Tsinghua, Civil and Structural Engineering was ranked number 5 globally.

The engineering school comprises six laboratories: Hydraulic Structures Engineering, Geotechnical Engineering, Hydrology and Water Resource, River Research, Hydraulics Research, Project Management, and Construction Engineering. Also, we have a State Key Laboratory of Hydrosience and Engineering. This organization covers almost most parts of civil engineering.

The civil engineering school of Tsinghua University is known as the cradle of civil and hydraulic engineers. Before the 1990s, our

department's education and scientific research were mainly for constructing the major national hydraulic infrastructures. For example, during 1958-1960, all professors and students in our department employed their graduation projects to design and build the Miyun Dam, the largest reservoir in Northern China, now an essential water resource for supplying to Beijing.

In 1959, the government, Premier Zhou Enlai, asked our department to participate in the Yellow River research to solve the flooding problems. Since then, our department has participated in China's major hydraulic projects, including the Sanmenxia Dam and the Xiaolangdi Dam on the Yellow River, the Three Gorges Dam on the Yangtze River, and the South-to-North Water Division Projects.

At Tsinghua University, our curriculum is reformed for undergraduate students to cover a broader range of subjects. Currently, we have about 15 categories, and civil engineering is one of them. Based on the reformed curriculum, we established a college education system. The undergraduate curriculum combines general education with disciplinary specializations. Since 2020, the curriculum has been centered on boosting the quality of the courses and reducing redundant courses where we aim to strengthen deep learning, develop more challenging courses, and enhance students' sense of attainment.

In addition, we are facing some challenges. One of them is the unpopularity of civil engineering due to the change in the job market demand. To cope with this issue, we want to redefine Civil Engineering for the future. In the past, we highlighted the engineering practice, while nowadays, students are more interested in modern technology, such as machine learning and artificial intelligence. Thus, the question arises, "Can we change our courses and curriculums so that basic knowledge can be merged with the new trends of modern-day society?". Regardless, we should remember that social needs are the root cause and the driving force determining the future development of Civil Engineering. So, another important question for our education is, "What could be the social needs in the future?".

We are trying to redefine civil engineering by using scientific, technical, and artistic means to build and maintain human infrastructures based on mechanics, economics, and aesthetics. Therefore, at Tsinghua University, civil engineering consists of the following fields: Construction Engineering, Transportation Engineering, Water Science and Engineering, Ocean Science and Engineering, and Engineering Management.

At the same time, we also updated the curriculum, reformed the teaching system, and tried to stimulate the students' spirit of exploration. For example, in one of the courses in hydrology, we changed from imparting the fundamental theories and methods to cultivating students' ability to analyze scientific questions and solve hot issues. Also, we want to enhance the scientific mindset, science literacy, and a sense of social responsibility.

In our department, a new program for cultivating talents with global competence was launched. The participants are expected to get involved in the global water governance system, aiming to develop globally competitive skills in water-related science, engineering, and management. This is in accompaniment with many international agencies and industries.

Regarding financial support, our department offers financial funding that covers students' expenses for scientific research, short-term and long-term visits to overseas universities, attending academic conferences, and participating in overseas practice projects. In this 4-year program, students can improve their English skills and join projects on-site. We also jointly cooperate with numerous international institutions. Some examples are the Tsinghua-Oxford Tutorial Project, the Lancang-Mekong Negotiation, the Global Water Issues Forum, the Sino-American Youth Dialogue, the Zero-Carbon Youth Summit, and the "Embrace the World" Project. In addition, students are encouraged to visit top universities and institutions for academic collaboration.

For the future, Tsinghua University is trying to set a global strategy by pursuing education and research at the highest level of excellence. We are developing innovative solutions that will help solve pressing problems worldwide. Since 2021, more than 3,424 international students from 130 countries have been studying at Tsinghua University around 3,000 are in the degree programs, including 1,000 undergraduate studies, 1,700 master's students, and nearly 450 doctoral students.

At Tsinghua University, we also try physically expanding from Beijing to Shenzhen in southern China. In addition, we have established some overseas centers in USA and Italy. This reflects our attempt to make international connections in our education system. We also have a program founded by a global company called the Schwarzman Scholars Program, which started in 2016. This program is mainly for master's students, who are thoroughly selected and funded by the company. We have also developed many interna-

tional internships based on overseas companies, especially Chinese companies located overseas.

Encouraging students to exchange and study abroad is our global strategy. Before Covid-19, more than 30 graduate students worked as interns in overseas companies, nearly 300 graduate students attended international conferences, and more than 150 graduate students made short-term visits to overseas universities for their studies. Currently, we have more than 40 international students from Pakistan, India, Thailand, Malaysia, Egypt, and a few from Japan. Typically, after obtaining Ph.D., international students can continue researching in China as a postdoctoral.

Financial support is available for local or international students to join international activities, such as attending international conferences or visiting overseas universities. The students enjoy international activities very much. For example, we had a training in Ecuador where we saw the embassy and some construction sites. We also got a chance to meet and connect with local people. Besides Ecuador, we have visited Thailand, Malaysia, Israel, and Australia.

In conclusion, Tsinghua Civil Engineering has been deeply rooted in China's infrastructure construction. Now, it is transitioning its focus from China to the world by accepting more international students and sending Chinese students overseas to participate in global issues. We hope to cultivate global talents by providing innovative solutions to support sustainable development. Thus, at Tsinghua University, we closely collaborate with the University of Tokyo for international students' education.

Life at UTokyo and After Graduating

Prof. Khalid Farooq

Chairman/Professor
Department of Civil Engineering
University of Engineering and Technology, Lahore, Pakistan



Thank you very much Yoshimura-san, and Professor Fukuda for inviting me for this wonderful symposium. I'm delighted to attend this exciting symposium, and I feel that I am back in the University of Tokyo, after 20 years. I had the honour to be the student of two great institutions, one in my country, where I am currently serving, and also the University of Tokyo from where I got my PhD degree.

Briefing of my introduction, my name is Khalid Farooq, and in the University of Tokyo's time, I was being called, Farooq-san. I am sure there is another Farooq-san these days with you, she is my lovely daughter.

I'm currently a professor in Civil Engineering Department, UET Lahore, and also serving as Chairman of the department. I'm working in this department since 1992. I did my bachelor's and master's from the same department, and I am honored to be the part of the University of Tokyo through the ADB-Japan Scholarship. Here I greatly acknowledge the support provided by the ADB and Japan, for pursuing this Ph.D. study.

Briefly, about my department, the Civil Engineering Department. This department was established in 1939, whereas the university, UET, was established in 1921. Currently, we have a total enrollment of students; bachelor's level 800-plus, and for master's, it is about 200. We are running a master's program in three different disciplines, such as master's in Geotechnical Engineering, master's in Hydraulics Engineering, and master's in Structural Engineering. We have some international students around 100, mainly from African countries, Afghanistan, some from Sri Lanka, Nepal, and I am happy to share that last year in 2022, one Japanese student also, became a part of our department, Mr. Amaar-san.

We have total 40 faculty members, and out of them eight are Japanese alumni. And further, I'm happy to share that five of us are from the University of Tokyo. So, we have a mini-Japan here in our civil engineering department. Our program has also been accredited by the Washington Accord since 2016.

Briefly, about my stay in Japan which was a lovely period in my life. Pre-2000, there was not so much communication. So, how do you get a chance to be part of the University of Tokyo? One of my seniors, currently he is our dean of Faculty of Civil Engineering, he got admission one year earlier than me in Mushakae Lab, Komaba Campus, and he told me about this program. He sent me the brochure and then I applied, and I was lucky enough to get the admission in civil engineering department under Professor Ikuo Towhata, in

geotechnical engineering lab. So, I'm happy that currently, one of my students, Mr. Ali, is also doing his Ph.D., and today he was with us.

I arrived in Japan in 1999 and stayed there up to 2002, I was living in Misato area in Saitama Prefecture. Those days though, you can say the activities were not so much as the students have these days, but enough activities we did those days too, like the lab parties. And one of the unique activities, which I still remember, was that annually, Professor Towhata used to invite all students of the laboratory to his home for the home party every year. And also, the FSO activities, some field trips. So that was really a great time I spent at the University of Tokyo.

About my lab, Professor Towhata is still regularly visiting me, and he is still in contact with me, and so we are collaborating in some technical matters. In Geotech Lab, there were three or four professors and about 35 students at that time. So, Professor Tatsouka, Prof. Towhata, Prof. Orense and Dr. Kowano, now she is professor in Geotechnical Engineering Laboratory. Research Assistant Uchimura-san, now he became professor, I came to know that he is now in another university.

So, around 30 to 35 students were there at that time. One of the snaps, Photo 1, I feel the asset of my life that I carry the signatures of all the lab members at my farewell, when I was coming back to Pakistan.

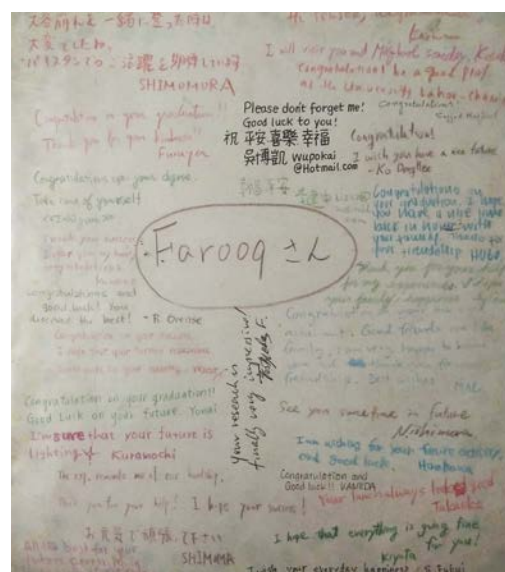


Photo 1

I was working under Professor Towhata at that time. There was a project of JR-East. There were issues of landslides due to rainfall. So, there was a project, and there was another professor, Orense at that time, he was working with us. For this project, we investigated two sites, one in Gunma Prefecture, and other in Chiba Prefecture.

We recovered some samples from there, and from experimental study, mainly on the element test using the triaxial compression testing, and later on, I developed this machine, here at my department at UET, then we performed some model testing as well. It was a very hectic phase of my life. Anyway, all ended well. I got the reward for this hard work in the end.

In PhD research, our focus was to propose a warning system for dealing the failure of the landslides due to rainfall, we can have the direct methods to stop the landslide failure, or we can have some warning system, so that we can warn for impending failure, so the train services may be halted. We proposed a warning system based on the monitoring of some critical soil parameters like degree of saturation and deformation of the slope.

I completed my Ph.D. in 2002, Photo 2, I was getting a degree from Professor Kunagai, Professor Kunagai was a very active professor, and also, he visited me twice in Pakistan, so I had a good time with him.



Photo 2

Briefly about my research at that time. As I said, our research was titled Experimental Study on Failure Initiation in Sandy Slopes Under Rainfall, Infiltration. So, we tried to experimentally simulate the mechanism of the rain-induced slope failures, and then we identified the various geotechnical design parameters, like, monitoring of the degree of saturation within this slope, and also the deformations as the supplementary parameters.

And after identifying these two parameters that the degree of saturation is the critical parameters through the element testing, and then manifesting them by the model testing under rainfall test. So, we identified that these are the two parameters, and then we tried to propose the methodology on how we can monitor the degree of saturation at that time. We installed some moisture meters, directly into the slope, and data was being monitored through the cell phones, and for deformation, we put some inclinometers there on the slope.

And based on that we proposed that if we can monitor the degree of saturation, when the degree of saturation is reaching to nearly 100%, and if there are some indications of the slow movements in the slope, we can give the warning. And I am glad to share that this monitoring system with the cooperation of JICA, one of our students, who was also an alumnus of the University of Tokyo, installed some instrumentation in the slope of Northern part of Pakistan to monitor these parameters to validate the warning system.

After coming to Pakistan, I joined back to my department in the geotechnical engineering division, where I was in-charge of the geotechnical engineering lab, and I feel that the knowledge, which I got from the University of Tokyo, I tried to establish our laboratory, setting triaxial testing machine, which was not already there. And then, I tried to continue the research about landslide failures under rainfall in the initial years because we have in northern part of Pakistan, hilly mountains. We investigated, and then we tried to formulate such recommendations for slope failure mitigation.

After coming back from Japan, after 4 years, I got the position of the professor, but a bit earlier. Professor Towhata, when I told, so he said, "Oh, you've become Professor Farooq". Anyway, I became in-charge of the geotechnical engineering division of my department and tried to set up the laboratory. We conducted research in various areas, like the rain-induced slope failures, then the soil improvements, rock mass characterization....

We had many problematic soils in Pakistan, like the swelling clays, the collapsible soil. So, we tried to formulate some zonation maps, so that based on basic soil parameters, we could get the geotechnical design parameters, at least for initial planning of the project.

In this course of time, I could produce three Ph.D. students, and more than 50 master's students. So, we have a good and strong master's program in three disciplines, as I said earlier. At the moment, I am part of the university's many decision-making bodies, and also involved in government projects.

My role as the Chairman of the department. I took charge in 2019. As I said, I am very much involved with the professors at the University of Tokyo, especially Professor Towhata. He is supporting our geotechnical engineering society very much, so I managed three international conferences within the last 3 years.

We do arrange multiple seminars/workshops, inviting people from industry, so that the students can have better insight into what they are being taught here. We are trying to improve the departmental outlook. The largest number of local research grants in Pakistan have been won by my departments, we have more than 30 people with Ph.D. degrees, mainly from abroad, as I said, about eight from Japan, some from China, the USA, and the UK. We also earn some international grants.

We are promoting student activities, one of such activities I normally do is to inform students about the University of Tokyo master's program. That's why many students are coming, and are approaching to your programs. So, myself and my dean, both are alumni of the University of Tokyo.

We have an important think tank for the provincial government because we are located in Lahore, which is the capital of the Punjab province. So, most of the projects seek advice from our department and my department is actively involved in consultancy projects.

As far as connection with professors at the University of Tokyo is concerned, Professor Towhata is continuously visiting me like five, six times and his recent visit was in last December in 2022, when we had an international conference on geotechnical engineering. Professor Kiyota, he was my junior in the laboratory at my time. Now, he is an associate professor I believe, in disaster lab, IIS. Yesterday, Professor Kawasaki, from the Center for Future Initiatives, visited our department, and we had a very useful discussion with him for

collaboration in various aspects in hydraulics and hydrology area. So, he was with us yesterday. So, what I want to say is that this department is very well-connected with the University of Tokyo.

We have established the MEXT Alumni Association, Pakistan, named as "MAAP." The total members across Pakistan are 250-plus. Every 2 years we have an executive body through election, and normally the Ambassador of Japan invite the MAAP members to his home for a party, like Japanese style.

So various activities are being performed on the platform of the MAAP, like providing guidance to the students, seeking admissions in Japanese universities, and engineering orientation seminars in local universities. Provide full assistance to the Embassy of Japan in selection procedure of the MEXT Scholarship, and conducting one-day orientation on, "how to study in Japan," issues and recommendations.

This MAAP also assists the Japanese Embassy in organizing various cultural events such as, Japanese film festivals, calendar exhibitions, flower arrangements, Ikebana, Japanese speech contests. Arranging an annual get-together alumni function, publishing a bi-annual MAAP newsletter, conducting JLPT Exams for students every year, conducting regular monthly MAAP meetings, so such activities are being planned from this platform.

Three years back, we, the alumni of the University of Tokyo in UET, Lahore also developed a MAAP chapter in Lahore, where we have about 40-plus members. As I said earlier, in UET Lahore we have about 20 alumni of the University of Tokyo in addition to others working in the industry. So, this year I am the Vice President of this committee.

This is the alumni, not only of the University of Tokyo, but other universities of Japan too. We arranged in 2020, Japanese Calendar Exhibition, and the officials from the Japanese Embassy, they came, and they inaugurated the event in which large number of students participated.

So, as concluding remarks, I would like to say, the International Student Education Program of Todai is very strong, and instrumental in capacity-building for developing countries. Like, Pakistani Japanese alumni are working on key positions, both in academia, and industry. The alumni of the University of Tokyo are really working on key positions.

I want to share that the Pakistan Engineering Council is the official body, which controls the engineering education in Pakistan which is headed by Dr. Nasar M. Khan, he is also Alumni of the University of Tokyo. He was with me at that time studying in the faculty of agriculture. Similarly, many alumni are the Vice Chancellors of five -six universities of Pakistan. Me and my dean both are the University of Tokyo alumni, and same is for other departments.

So, because your program is very well managed and flourished, but just if you are asking some suggestions, what we can say is that may be more efforts towards developing collaboration between universities of developing countries with the University of Tokyo that would be very helpful in capacity-building of developing countries.

Another suggestion, which I think will be very helpful for us, if we can collaborate for master's and Ph.D. student exchange programs that the students can complete their coursework here in Pakistan and visit Japan for short duration to have better insight of the research, if this program can be launched, it will be very nice.

At the end, thank you very much everyone for listening to me patiently, and I'm glad to be the part of this symposium. Thank you very much.

Career Development and Planning

Mr. Amad Ud Din

Chief Engineer, TOA corporation



Thank you, Yoshimura-sensei. First, I would like to thank all the alumni, and also the sensei especially, for arranging this symposium. My name is Amad, and I work for the TOA Corporation, and I will briefly introduce myself, and the contents of the presentation as we go along.

I completed my bachelor's in Pakistan from UET Taxila, in 2013. After completion of my bachelor's, I came to the University of Tokyo, and I completed my master's in civil engineering. I belonged to Oki Lab, Kazuo Oki-sensei, and my research lab was in Komaba, at that time. I thoroughly enjoyed my time at the university. I still cherish those 2 years of my memories.

Briefly, I will talk about my company, my professional experience, and career planning. TOA Corporation is one of the biggest companies in Japan, which is mainly working in maritime facility construction. That means ports, harbors, artificial islands, bridges, basically, all the structures on the sea. TOA Corporation has been working in the market for more than 100 years, and so far, we have completed 560 projects, in more than 53 countries. It has areas in different fields, transportation, marine dredging, and reclamation, building works, power and energy, and research and development.

After completing my master's, I decided to work in Japan, and I started working as a civil engineer at TOA Corporation in the estimation section. After this, on various occasions, I was dispatched overseas to different countries, mainly West Africa and South Africa, like Togo, Senegal, and currently, I'm in Angola. During these timelines, I held various positions at the project site, site engineer, construction manager, and currently, I'm a chief engineer.

I have just plotted some projects on the map. This is my experience map and, there are two colors you can see here, one is green and the other is in red. The green ones are the countries where I've been dispatched overseas at the project site, and the red ones are the ones, which I have worked on in the estimation section in Tokyo, on tender projects. Currently, as of this moment, I have completed 11 projects, in nine different countries.

When I started working in TOA Corporation as a civil engineer, basically what we do is we check and read the specifications when we receive a tender project or when the tender is opened, Then, we do the quantity take-off, check the quantities, such as concrete, re-bars, and make sure all the structures are the same as quantified in the bill of quantities.

Based on that, we prepare work method statements, which is the most suitable method statement for the work to be executed. To include the budget, we get the quotations from different suppliers and perform cost estimation. Along with these things and planning, we also ask for some clarification from the consultant (if required), and then prepare our bid proposal. After completion, we submit it to the client.

Since I belong to the international division, all the tenders which are open are/were all in English. So, I was quite comfortable and lucky that I was able to work in English since I'm still trying to improve my Japanese.

Moving on to the next slide, overseas assignment. For example, I was assigned to three different countries, as I explained earlier. The first one was Togo, West Africa. where we were building a fishing port. I was involved in the tender stage during the pre-bidding process. Once we won the bid, I was sent overseas to Togo to complete and build the project.

The main areas where I worked in Togo were mainly civil works, building works, exterior works, mostly referring to miscellaneous works like, fences and roads, and pavements, and quality control works. My main duties involved site control of resources and drone surveys. I prepared and planned progress reports, concrete mix designs, and subcontract management.

I was in Togo for about 2 years, from 2017 to 2019, and it was quite interesting for me to work in West Africa, where the working environment is completely different from Japan. Of course, there

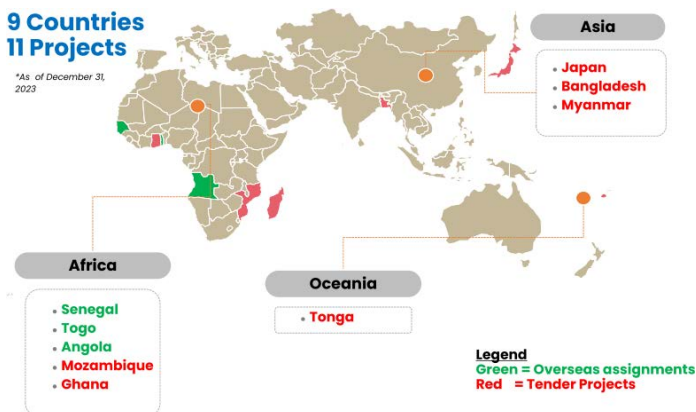


Fig. 1 Personal Experience Map

were challenges related to time, punctuality, discipline, and of course, operations as well. But it was a good experience for me to learn and to produce countermeasures.

After that, the next project that I worked on was in Dakar, the capital of Senegal, and we were rehabilitating a wharf. During this time, I managed a team of more than 10 engineers. In addition, pavement works, and pile supports were the main works I was involved in. Also, it included planning, estimation, and subcontractor management.

The third one, the one in green color is Angola, where I am currently present. There are two projects that we have in Angola, and I belong to the second one, which is an iron ore jetty. Basically, we are building a jetty, so that a big ship can berth, and there's apparently, a lot of iron ore deposits in Angola, and new jetty construction will facilitate this kind of transportation of this iron ore from Angola, and in return, will help the economy of the country.



Fig. 2 Construction of Iron Ore Jetty Sacomar (Angola)

Currently, I'm managing more than 20 engineers, and of course, we have other staff, such as supervisors and local laborers, who are not included to this number. The main works that I'm in charge of are, dredging works and piling works. In addition to the previous projects, one new thing, which I'm doing right now, is a cost-impact, and delay analysis. This project is different from other projects, by being an EPC project, which includes design-build, and so, we are putting our utmost efforts into the time schedule, and its impact on the cost.

This was just a brief schedule of my various overseas experiences. Now, during these projects, I had various challenges, so I just would like to share one of them.



Fig. 3 Left (Before Swell) Right (After Swell) in Togo

This is our project site in Togo, in the Atlantic Ocean. And you can see in the Figure that the tide is very rough, the comparison can be seen before (Left) and after (Right) the swell. After the tide, it almost took over our temporary access for breakwater. The tide data that we got from the specifications did not represent the actual site conditions. So, we had to adjust our working time, in regard to the safety of the team.

We had divided the work into different sections of our teams, and worked only during low tide, to complete this project, and so it was one of the biggest challenges. This structure that you're seeing is the main breakwater for the fishing port. As you can imagine, how dangerous it's been for the manpower and the equipment.

This is the fishing port, old fishing port in Togo. Actually, there was no port, which was built specifically for the berthing of the ships. We built the port on the bottom right, because there was congestion, and in order to increase job opportunities, and also increase the supply of fish in the markets, this port was built with the help of the Japanese government-granted ODA projects. So, I'm very happy that I was a part of this project, including in the tender stage, and in the opening stage as well.



Fig. 4 Left (Old Fishing Port in Togo) Right (New Fishing Port after construction in Togo)



Fig. 5 Rehabilitation of Third wharf in Senegal (During construction)



Fig. 6 Rehabilitation of Third wharf (After construction) in Senegal

This is the project (Fig. 5 and 6) that I completed in Senegal. Maybe, it's hard to see from (Fig. 5), but from the next picture (Fig. 6), it will be clearer. This is the port in Senegal, which is the rehabilitation of the wharf. This wharf was old, and to extend this, we had to install steel pipe piles and cast a pavement. And then apparently, another party will have to install the rails around here. I was involved in this project for about six months. Unfortunately, COVID came and then, we had to evacuate from Senegal in 2020, June. So, unfortunately, we didn't complete it at that time but later.

Moving on to the next slide. This is Angola. Currently, we are using our piling barge to install steel pile pipes. We have already started our works, and we are hoping to complete it, as soon as possible.

About career planning. I just want to very briefly explain some of the steps, since most of the audience here are students, and if you're looking for a job in the Japanese industry, I would request and suggest that you should start job hunting, one year before your graduation. It's very important, and apparently, there are many layers of application stages.

Most of the time, it involves document-screening at first. Some companies ask for a written test, which my company did. This is followed by an initial interview, and then, the final interview. All this will take some time, at least three to four months. Therefore, if you're looking for a job in Japan, it's better that you start job hunting, one year before graduation.

In my case, there was a Career Forum, organized by the University of Tokyo. I applied through this to my company, and I got the job later, with the help of the symposium team.

I am glad that I joined the University of Tokyo because of not just education, but the experience it provides with the kind of diversity of the students. And this diversity, and cultural space provided by the university built my base for abroad, like in various countries overseas.

If I didn't have that base, I wouldn't be able to handle it as well as I had. I'm really happy that the university is not only providing a good education, but a very good experience, in terms of diversity, multi-cultural and cultural exchanges. That's pretty much it from my side. Thank you very much.

Journey of Reflection: My Graduate School Experience, Career Growth

Dr. Mustafa Atta E

Bridge/Civil Engineer, CTI Engineering International Co. Ltd.



Good afternoon, everyone. Thank you very much, for having me in this symposium, 2022. My name is Atta E Mustafa.

I did my Ph.D. at Bridge and Wind Engineering Laboratory of University of Tokyo, Japan in September-2022, under the supervision of Professor Dr. Tomonori Nagayama. Thank you, Sensei for accepting me as a student in your lab. Currently, I am working as a Civil Engineer at Road and Transport division (道路・交通部), CTI Engineering International Co., Ltd. (CTII) since November 2022.

I did my B.Sc. in Civil engineering from University of Engineering and Technology, Lahore, in 2012. Then, I worked in National Engineering Services Pakistan (NESPAK) and Lahore Development Authority (LDA) on various projects in Pakistan. I joined Bridge and Wind Engineering Laboratory, UTokyo for my master's from 2015-2017. I did job in CTII for 2 years and continued my Ph.D. in 2019.

In master's, my research was related to the vibration control of shinkansen nonlinear PRC bridges using Multi-Tuned Mass Dampers (MTMD). The nonlinear vibration in PRC bridges was clarified, as a first step, which was because of the provision of the crack section in PRC girders design. The prestressed concrete girders are normally designed using allowable stress design in which we don't allow the crack in the concrete. However, in PRC girders, the girder was design using ultimate stress design along with prestressing in which crack was allowed. These induced cracks due to the vibration caused reduction in natural frequency of bridges and resonance phenomena. To control this problem, because of non-linear systems, multiple-TMD were proposed, instead of single-TMD, as it could suppress the dynamic response well below the deflection limits.

I got admission in UTokyo again in 2019 as a Ph.D. candidate. I did research on 1) bridge deflection estimation for long-period bridge vibration data due to multiple vehicles passing over the bridge at express highway vehicle speed, 2) axle load estimation as a part of bridge weigh-in-motion (BWIM) systems. In this system, the vehicular weight is estimated from the bridge response acceleration due to vehicle over the bridge by using bridge as a weighing scale. Accelerometer sensors were used for the data collection, in terms of acceleration.

For the 2 years between my master's and my Ph.D., I worked at CTI Engineering International Co., Ltd., as I mentioned before. I worked on a project in my country (Pakistan). It was around 13-kilometer-long road construction project, which included pavement,

bridges, culverts and earth reinforcement structures i.e., MSE and ground anchors.



Fig. 1 Construction of N70 Project, Pakistan

As a bridge engineer, currently, I'm working on a design review of a road project as shown in Fig. 2. It is inside a lake and purpose is to avoid the traffic congestion. It includes a bridge sections, and intersection on embankments.



Fig. 2 Road project in Philippines

I'm also involved in a research project for the road condition indicator (RCI) using smartphone based DRIMS (IRI) and machine learning approach. In this research, the profile of the road will be determined using iDRIMS and rutting, texture, and cracking parameters will be calculated using AI/IoT on image data.

During my stay in Japan, I visited maximum areas of Japan. I also tried various kinds of cultural and traditional local food in Japan, but because of my limitation of halal (Muslim) food, I could not enjoy all kinds of food, but yes, I tried to taste maximum kinds of foods staying in my limits.

Once again, I want to say thanks to UTokyo for offering me an opportunity to be the part of this department, and completing my master's and Ph.D. degrees from here, and I could join CTII.

In the last, I want to share my experience in UTokyo and want to give a few suggestions for the additional improvements in our department:

1. In our department, research is mostly field problems' oriented. For example, Bridge Weigh-In-Motion, and vibration control of bridges contain both applied engineering as well as scientific part of research.
2. Host family programs and ISACE symposiums; this picture below belongs to 2017 host family welcome party. We can see so many people in this host family party. I was part of the ISACE in 2017 and we also organized a symposium names "Innovation of future city; vulnerability and sustainability".



Fig. 3 Host family Party-2023

3. Job forums are very important for the students because many of the students don't know nothing about the companies and their requirements in Japan, especially for the international students because we have the language limitations as well. In that case, it is a good opportunity to have an introduction with many companies. But one thing, because it is better to apply for the job 1 year before the graduation therefore, maybe it would be better if job forum organizes in September/October, i.e., 1 year before the graduation so that student can apply well in time.
4. The last part is my suggestions for additional improvements in the department: Now all the labs are utilizing machine learning approaches in the research therefore, I think, a machine learning based coursework need to be introduced in the curriculum which might include applied machine learning approached in the field of civil engineering.
5. Some of the students have group research in their laboratories, but mostly students are doing individual research. Although it is case by case but if we have the group research, there would be following benefits:

- i. A group of students can have a vast approach towards various aspects of a research problem and can get to better research outcomes.
- ii. Students will have more publication as authors or coauthors which will help them in securing their future as a researcher or a faculty member.

6. The third is the research ideas contest on social media, digital media, or any other kind of media. The contests can be in the form of one minute-video presentation using social media, digital media, TEDx UTokyo etc. The podcast can be another option in which our alumni, professors and the current researchers can be invited who can just talk to each other about the potential research areas. This activity will not only provide a platform for interaction among experience and fresh researchers but also bring-out some good research ideas.
7. Inter-laboratory free-talks and technical gatherings about the future of civil engineering can be held, once a month, or maybe once in a semester in which participants can come and talk to each other, what are you doing and what are their ambitions. Sometimes, in such kind of talks, we get new ideas and life goals.
8. The internship programs for international students need to be introduced in our department. Some of the universities have internship programs for the students. In that case, students can join different companies as an internee, and can experience the working environment. They can also make grounds for their future job during their internship.

Lastly, through this international program, I could experience the versatility of the culture and the way of thinking of different kinds of people across the world towards their lives and their goals. Before coming to Japan, I was thinking quite different about Japan. People say that Japanese are shy, but after living in Japan for five years, I cannot say that they are shy, but they are humble. They don't like to show off whatever they have. When Japanese people speak, they try to speak logical. I learned from them, where to speak and where not to speak. I understand that how the Japanese like to work and want their employees to work as a team, and I am using this experience in my job. I wish all the best to my respected teachers and my juniors.

This is basically all from my side. Thank you very much for your kind attention.

Report of International Field trip

March 1–2, 2022

Executive Committee of ISACE

1st Day

On March 1st and 2nd, the FY2022 international technical tour was held to build a strong connection between international students and deepen knowledge in civil engineering and Japanese culture. This year's destination was Yamanashi prefecture, the home of Mt. Fuji, the tallest mountain of Japan. In total, 30 people, including Fukuda Sensei, ISACE members and 2 Japanese students, participated in the trip.

We departed by bus from Hongo Campus at 8.30 AM. During the 3-hour bus ride from Tokyo to Yamanashi, we always had a lively interaction among ourselves. Introduction session, photo competition, and a passive game called Who's The Killer, a game similar to the popular game called Werewolf, only this time the duration of the game is the entire day, were held on the bus. Apart from these activities, we also had fun conversations throughout the ride.

Our first destination was Arakawa Dam, a rock filled dam used for flood control and water supply. We took a walk around the dam's perimeter and took pictures for the 1 hour we were there. By the time we departed from the dam, all of us were presented with Arakawa Dam Card that explains about the dam. Fukuda Sensei mentioned that apparently, there are around 800 dams throughout Japan.

Next, we went to Mt Fuji Panoramic Ropeway where we rode a gondola to the top of a mountain and enjoyed the scenic view of Mt. Fuji. Although we did not have much time there, we enjoyed the stunning scenery of the town of Fujikawaguchiko and Mt. Fuji. We also took group photos in front of Mt. Fuji.

Afterwards we head to Arakurayama Sengen Park. After trailing and climbing some stairs, we arrived at Chureito Pagoda where we also took group photos and enjoyed the scenery.

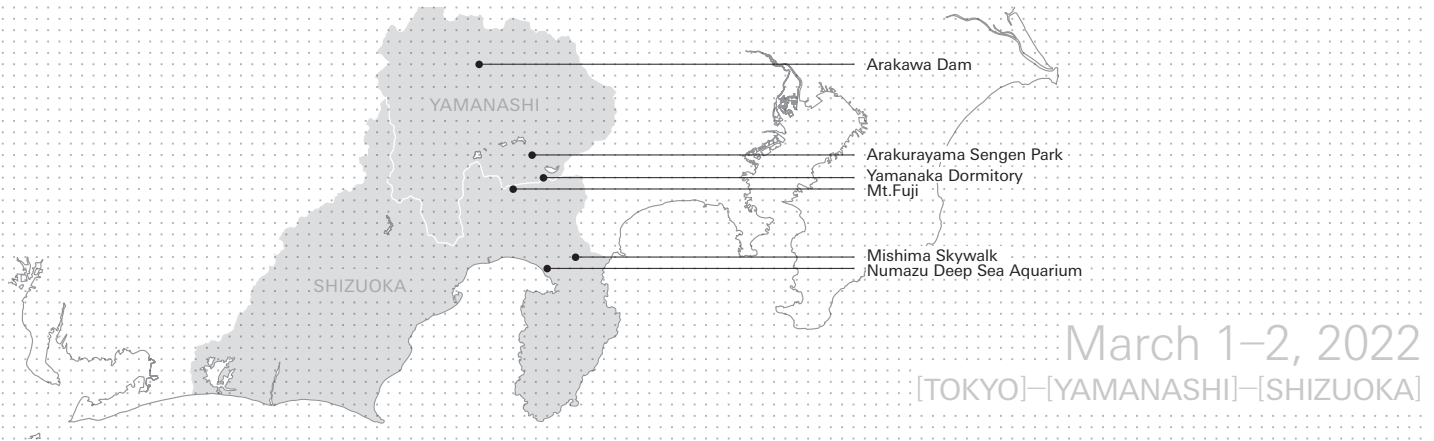
The last destination of the first day was Yamanaka dormitory, one of our university's dormitories, where we spent the night. After distributing the key, unpacking, and resting, we had our dinner together. After dinner, we gathered to have a fun night activity. During this time, we had a fierce competition of Charades and storytelling.

The participants were divided into 3 groups, with 7 participants in each group. For the first activity, Charades, each group had to



select one member to stand in front of them. The word was shown to the rest of the group and they had to explain it to the person and he/she had to guess the word. This game was successful as an ice-breaking game which encouraged the participants to communicate with each other. Each group was determined to win, which made the game so much fun.

The second event was story telling. In this activity, we prepared two boxes of lottery, where the first box contained some well-known stories (e.g., The Red Riding Hood, Cinderella, The Three Little Pigs) and the second box contained the genre (i.e., horror, comedy, romantic). We asked all 3 groups to pick 1 lottery from each box. Each group had to perform the story they had picked up but as the genre they also had picked up. 25 minutes were given, and all the group took this seriously, with occasional laughter, arrangements and strategy heard from here and there. Group 1 performed The Three Little Pigs with mystery. It was funny, interesting, and no one could predict the ending since group 1 took the story with a different twist. While group 2 made a comedy Pinnochio, and it seems fair to say that no one in the room expected Pinnochio acclimating to his life in Japan. Group 3 performed Red Riding Hood with a romantic twist and a massive cliffhanger. All of them were entertaining and funny, a great night and a fond memory with our photos together as commemoration. Afterward, some students still lingered and conversed with each other, some took a long bath in sento, and then all went to sleep.



2nd Day

The second day started with breakfast at the dormitory. After that, we headed to our first destination of the second day, Numazu Deep Sea Aquarium.

The aquarium was unique, the majority of the specimens were captured in Surugawa Bay, the span of ocean just in front of Numazu Deep Sea Aquarium. There are plenty deep sea specimens and also a giant snow crab on the first floor. While the second floor displayed preserved specimens and some models of the infamous prehistoric coelacanth.

Afterwards, we went right away to the View-O Observation Deck, a 5-minute walk away from the aquarium. Here, we explored one of the largest water gates of Japan built for protecting the city from a

tsunami. Plenty of students took pictures in groups and just enjoyed the view of Surugawa Bay and Numazu.

For the last stop of our trip, we visited Mishima Skywalk, the longest pedestrian suspension bridge in Japan. Here, we enjoyed good food, good dessert, and a good view. This place also provided some extreme activities, such as ziplining, mountain climbing, and ATV riding. Some of the students also went ziplining and they said that it was wonderful. After that, we headed back to Hongo campus and concluded our trip.

We considered this trip a success. The participants enjoyed the experience while also creating memorable relationships with other international students. We, FSO and ISACE, hope that the experiences from this trip will benefit their lives and hope that this trip will become one of a good memory of their college lives.



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Department of Civil Engineering, The University of Tokyo

編集 Zainab Farooq + Krittanai Sriwongphanawes + Kenny Colin Tengsejing
+ Sothyarak Rath + Manazir Hussain

デザイン 新目 忍



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