

Newsletter

International Graduate Program on Civil & Environmental Engineering

The opening of Hokuriku Shinkansen

A new section of the high-speed railway line “Hokuriku Shinkansen” connecting Nagano, Nagano Prefecture, and Kanazawa, Ishikawa Prefecture, Hokuriku region, commenced operations on March 14, 2015. Combined with the existing section that opened on October 1, 1997, which connects Tokyo and Nagano, there is now a rapid and convenient means to travel between

Tokyo and the Hokuriku region. With the 260-km/h high-speed train, it takes an average of two and a half hours from Tokyo to Kanazawa. Before the extension to the line, the average time was nearly four hours. With such a significantly minimized commute time, more business opportunities will be possible in the Hokuriku region and the capital. Additionally, the abundant

natural and historical sites as well as the local venues in the Hokuriku region will become more accessible to tourists, economically benefiting the region.



Map of Hokuriku Shinkansen

Inspection, diagnosis, maintenance, and rehabilitation of infrastructures

In light of deterioration concerns, the inspection, diagnosis, maintenance, and rehabilitation of infrastructures constructed in the past decades has been initiated in Japan. For example, the Central Nippon Expressway Company (NEXCO Central) is now operating expressways in the central areas of Japan. At present, over 60% of the bridges and 30% of the tunnels operated by the company have served for more than 30 years. In March 2015,

the company proposed a maintenance plan for the coming years. Inspections and evaluations will be conducted once every five years for the 5,567 bridges, 375 tunnels, and 958 other facilities operated by the company. Furthermore, innovative technologies for the inspection and diagnosis will be developed and implemented. The maintenance cycles will be established to consider reliability, efficiency, and economy.



Inspection of a bridge

50th anniversary of the Department of Civil and Environmental Engineering at Saitama University

We are approaching the 50th anniversary of the Department of Civil and Environmental Engineering at Saitama University. Our department was established in 1965 with the creation of an undergraduate program. In 1973, the master's program was established, followed by the doctoral program in 1989. In 1995, the international

graduate program was introduced. In remembrance of the past and the endeavors over the last 50 years, our department recognizes the notable advances in education and research. We will continue to strive toward providing high quality education and contributing to the society.



A E7 series train on the Hokuriku Shinkansen

Message from the Head of the Foreign Student Office

First, I would like to send my deepest sympathy and condolences to the Nepalese people for the earthquake that occurred in April 2015. To all of our alumni from Nepal, I hope that you and your families are safe. As Japan is also a country that is frequently affected by earthquakes, we are well aware of the devastating effects of such a terrible experience, and the pain you feel is shared by us. Natural disasters such as earthquakes, floods, and tsunamis continue to threaten human lives as well as the infrastructure of the society. Scholars and researchers in the field of civil and environmental engineering should keep striving to contribute to disaster prevention and recovery.

In March 2015, 10 international students graduated and obtained their degrees, while a new group of students joined us in April, followed by another group later in October. I am happy to see that many of our graduates are actively involved in the development of their home countries. We hope to keep in close contact with you. I wish all of you happiness and health.



Professor Hiroshi Mutsuyoshi

Head of the Foreign Student Office
Saitama University

Research Profile Series (19)

Earthquake Disaster Prevention & Mitigation Group

The Earthquake Disaster Prevention & Mitigation Group is a research and study group of Department of Civil and Environmental Engineering of Saitama University. This group is led by Professors Hidegi Kawakami and Masato Saitoh, Associate Professor Hidenori Mogi, and Assistant Professor Hisashi Taniyama. One Japan society for the promotion of science (JSPS) researcher, one doctoral, 12 masters, and 10 undergraduate students are currently conducting research work within this group. The group offers good chances for both international and Japanese students to work together, share ideas and knowledge, and eventually boost their skills.

This research group is engaged in studies on earthquake engineering and the engineering applications of earth science. The main research activities include geomechanics, seismology, seismic wave propagation, site and propagation path effects on strong ground motion, temporal and spatial variations of strong ground motion, dynamic failure of ground, mechanics of granular materials, deformation of surface soil layer due to earthquake faults, seismic excitation and structural response, soil-pile-structure (SPS) interaction, base isolation systems, lifeline systems, and reliability theory.

Pile foundation is the most popular choice for key point installations to transfer the vertical load mostly occurring from the weight of the superstructure and to carry lateral loads in seismically active regions to a rigid soil stratum where the soil beneath the superstructure is not strong enough to withstand the load.

The motion of soil and pile and structural response subjected to ground excitation are interdependent. Evidently, the behavior of the SPS system cannot be predicted by considering their individual response separately. Hence, the importance of accounting for SPS interaction in earthquake engineering solutions has received increasing attention in recent years.



Although full-scale field tests can provide high quality data, they have a number of limitations in terms of cost, loading conditions, control mechanisms, and material properties. Model tests to understand the behavior of a prototype offer the advantage of simulating complex systems under controlled conditions and are valuable for gaining insight into the mechanisms occurring within the prototype system.

The Earthquake Disaster Prevention & Mitigation Group provides the opportunity to conduct shaking table experiments owned by Saitama University with scaled model of the SPS system to estimate the response characteristics of SPS systems.

As a part of my masters study, I am engaged in shaking table experiments to study the kinematic response of a SPS system that involves the consideration of site nonlinearity of soil, estimation of effective foundation input motion, response of footing and superstructure, and the bending and axial strain in piles when the SPS model system is subjected to ground excitation of various amplitude and frequency.

This study also includes analytical computation to estimate the response of footing and superstructure. Comparison between experimental and analytical results will be useful in determining the effect of soil site nonlinearity on the response of the SPS system.

(Written by Mr. Ullah Md Shajib)

Graduation Time Congratulations

September 2014

Mr. Abeykoon Jalath Dammika from Sri Lanka was awarded his Ph.D. degree under the guidance of Prof. Y. Matsumoto. His doctoral thesis was on the “Experimental-analytical framework for damping change-based structural health monitoring of bridges”.

Ms. Badabadda Gamage Nadeeka Sewwandi from Sri Lanka was awarded her Ph.D. degree under the guidance of Prof. K. Kawamoto. Her doctoral thesis was on the “Development of a permeable reactive barrier to treat leachate from municipal solid waste dumpsites in Sri Lanka: an effective use of locally available materials for heavy metal removal”.

Mr. Nguyen Duc Phuong from Vietnam was awarded his Ph.D. degree under the guidance of Prof. H. Mutsuyoshi. His doctoral thesis was on the “Influence of quality of mechanical splices on behavior of reinforced concrete members”.

Mr. Nguyen Hoang Tung from Vietnam was awarded his Ph.D. degree under the guidance of Prof. H. Kubota. His doctoral thesis was on the “Psychological motivation of travellers’ behaviour regarding the use of public transportation”.

Mr. Khawaja Adeel Tariq from Pakistan was awarded his Ph.D. degree under the guidance of Associate Prof. T. Maki. His doctoral thesis was on the “Mechanical behaviour of cement treated sand and its application to improve the cyclic behaviour of pile foundation”.

Mr. Ali Murtaza Rasool from Pakistan was awarded his M.Eng. degree under the guidance of Prof. J. Kuwano. His master’s thesis was on the “Mechanical behavior of unsaturated soils in isotropic loading-unloading, monotonic and cyclic load sequence”.

Mr. Wang Tianyu from China was awarded his M.Eng. degree under the guidance of Prof. K. Suzuki. His master’s thesis was on the “Dilatancy characteristics of different stress paths using DEM”.

March 2015

Mr. La Vinh Trung from Vietnam was awarded his Ph.D. degree under the guidance of Prof. N. Tanaka. His doctoral thesis was on the “Riverbank erosion under boat-generated wave attacks and proposed countermeasures for wave attenuation”.

Mr. Baniya Arjun from Nepal was awarded his M.Eng. degree under the guidance of Prof. K. Kawamoto. His master's thesis was on the "Gas transport parameters and pore structures for variably compacted landfill final cover soils".

Mr. Doan Van Binh from Vietnam was awarded his M.Eng. degree under the guidance of Assistant Prof. J. Yagisawa. His master's thesis was on the "Experimental study on geometric characteristics of scour hole caused by overtopping flow from embankment".

Mr. Narendra Dongol from Nepal was awarded his M.Eng. degree under the guidance of Prof. J. Kuwano. His master's thesis was on the "Effect of water content on mechanical behavior of unsaturated soil under cyclic and monotonic stress states".

Mr. Hein Zaw Htet from Myanmar was awarded his M.Eng. degree under the guidance of Prof. H. Mutsuyoshi. His

master's thesis was on the "Application of fiber model for analysis of flexural behavior of R.C. beam using mechanical splice".

Mr. Muhammad Rashid Iqbal from Pakistan was awarded his M.Eng. degree under the guidance of Prof. K. Kawamoto. His master's thesis was on the "Consolidation characteristics of landfilling and buried waste samples in Japan: Effects of waste composition and various mixing proportions".

Mr. Nirmal Raj Joshi from Nepal was awarded his M.Eng. degree under the guidance of Associate Prof. S. Asamoto. His master's thesis was on the "Study on shrinkage mechanism of cementitious materials based on liquid characteristics".

Mr. Naqvi Syed Umair Ali from Pakistan was awarded his M.Eng. degree under the guidance of Prof. K. Suzuki. His master's thesis was on the "Simple shear test simulations for improved accuracy of discrete element method".

Mr. Gonaduwege Lasitha Perera from Sri Lanka was awarded his M.Eng. degree under the guidance of Assistant Prof. E. Furusato. His master's thesis was on the "Mixing characteristics of two choked coastal lagoons in Sri Lanka with different lagoon mouth properties and development of a new bulk model for estimating salinity stratification".

Mr. Sheharyar E Rehmat from Pakistan was awarded his M.Eng. degree under the guidance of Prof. Y. Matsumoto. His master's thesis was on the "Vibration based monitoring for reliable modal damping identification of single span pc bridges".

Mr. Samandar Salihi from Afghanistan was awarded his M.Eng. degree under the guidance of Prof. Y. Okui. His master's thesis was on the "Shear capacity of steel I-section girders with thin structured web".

Welcome New Students

October 2014



Nguyen Duc Nghiem
Vietnam, Doctor



Ahmed Ghufuran Pasha
Pakistan, Doctor



Faghihnia Torshizi Mostafa
Iran, Doctor



Ho Manh Hung
Vietnam, Doctor



Nguyen Thi Loan
Vietnam, Master



Rahman Mursheda
Bangladesh, Master



Sharma Santoshi
Nepal, Master



Aslam Shuaib
Pakistan, Master



Wang Wei
China, Master

April 2015



Fang, Jie
China, Master



Liu, Zongmu
China, Master



Qin Sen
China, Master



Xie, Zhenyu
China, Master



Muhammad Faheem Uddin Afzal
Pakistan, Master



Ilyas Akram
Pakistan, Master



Bimali Chaturika Amunugama
Sri Lanka, Master



Erojan Dhoju
Nepal, Master



Nabin Kumar Ijam
Nepal, Master



Gayan Buddhika Illangakoon
Sri Lanka, Master



Bidha Laxmi Joshi
Nepal, Master



Mohammad Arif Mohiuddin
Bangladesh, Master



Nguyen Van Trung
Vietnam, Master

News

New Appointments

Dr. Takeshi Saito was appointed as an assistant professor of geotechnical and geosphere research group in April 2015. His research interest is hydrogeochemistry and geo-environmental engineering.

Faculty Promotion

Dr. Masato Saitoh was promoted to Professor of earthquake disaster prevention and mitigation group in October 2014. His research field is earthquake engineering and seismic design of structures.

Alumni Information

Dr. Monzur Alam Imteaz was promoted to Associate Professor of Swinburne University of Technology, Australia in December 2014. He graduated from Saitama University in September 1997.

Dr. N. A. K. Nandasena, a 2012 doctoral graduate and JSPS researcher at Saitama Univ., is currently working as a Lecturer at the University of Auckland in New Zealand.

Awards

Assoc. Prof. Masahiko Osada was elected as the ISRM (International Society for Rock Mechanics) Franklin Lecturer 2014. The Award Lecture entitled "Drying-induced deformation characteristics of rocks" was delivered at Asian Rock Mechanics Symposium on October 15, 2014 in Sapporo, Japan.

Ms. I. M. T. N. Illankoon received the excellent presentation award at 16th JSCE International Summer Symposium 2014, for the paper "The use of triaxial strain gauge and laser displacement meter for drying shrinkage measurement: A comparative analysis".

Assistant prof. Yao Luan was awarded the Japan Society of Civil Engineers (JSCE) Award 2014, together with Prof. Tetsuya Ishida, the University of Tokyo, for the research "An enhanced model for shrinkage behavior based on early age hydration and moisture state in pore structure".

Condolences & Sympathies

There was a severe earthquake in Nepal on April 25, 2015.

We offer our deepest condolences and sympathies to people in Nepal. In early May, we sent an email to our Nepalese

graduates, confirming their safety. Thank you for your replies during the difficult times following the earthquake.

We pray for Nepal's quick recovery from the earthquake.

Message from Alumni

It is certainly a great pleasure to share with the distinguished readers a few thoughts regarding the impact of the efficient education that I received at Saitama University. I received the Monbusho Scholarship and joined Saitama University in 1996 and had the absolute privilege to study under the observant supervision of a prominent researcher, distinguished professor, and a world-class leader, Prof. Hiroshi Mutsuyoshi. Our daily interaction resulted in acquiring significant knowledge in the fields of structural engineering and concrete behavior. My supervisor and currently my very good friend and mentor, Mutsuyoshi Sensei, formed an excellent research team. The team worked diligently to provide a proof of concept (POC) for innovative solutions to mitigate seismic damage to bridge structures, and I received my D. Eng. degree in 1999. Nakazawa San and Nakasone San were always there to assist; it was truly a very friendly and productive environment!



I was also very fortunate to receive the JSPS postdoctoral fellowship in 1999, which provided me the opportunity to pursue my research goals. The opportunity not only allowed me to continue learning from Mutsuyoshi Sensei but also to maintain continuous interactions with my good friends, Maki Sensei and Sato San. The undeniably kind and truly encouraging words that I constantly received from Mutsuyoshi Sensei, Machida Sensei, and Yamaguchi Sensei were undoubtedly life-changing.

My wonderful better half and wife, Gehan Elsayed, received her master's degree and Ph.D. We, then, moved to the USA where I accepted a research position at the University of Kentucky. In 2003, I accepted a faculty position at WVU Tech. In 2006, I joined Marshall University and climbed the academic/administrative ladder to become the Dean of the Engineering College. The hard work in the industry and academia for the past 25 years resulted in the type of researcher, educator, and administrator that I had always aspired to be. Saitama University's magnificent program and the wonderful people that I met while at Japan have provided me with an unparalleled opportunity to achieve my career goals; I am a very proud Saitama University alumnus. If I could suggest a few concluding words to the current students, I would say, "Enjoy the phenomenal opportunity that you have, establish life-long friendships, and remember that nothing replaces the hard work." I convey my very best wishes and kind regards to all of you.

Prof. Wael Zatar
Marshall University, WV, USA

Message from the Foreign Student Office

We are pleased to send you the 20th issue of the Newsletter. Twenty years have passed since the Newsletter was first issued in 1996. Time flies!

For the 20th anniversary edition of the newsletter, we asked Prof. Wael Zatar, who began his doctoral program in 1996, to write the "Message from Alumni" column. We would like to express our thanks to him for his contribution.

We have also issued the prospectus for 2015. You can see the new prospectus on our home page. It has been recently updated, and our faculty members are divided into five groups. Everything

changes with the change of the times.

Please get in touch with the FSO. We wish you the best of luck with everything.

The Foreign Student Office (FSO)

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