The 34th KKHTCNN Symposium on Civil Engineering

Faculty of Engineering Chulalongkorn University, Thailand

Teshome Birhanu　　　Winfred Mutungi　　　西尾　美由莉　　　Maxime Zabrodin

MIYURI Nishio

博士課程三年　　　　　博士課程二年　　　　　修士課程二年　　　　　修士課程二年

小島　拓巳　　　　戸田　航太

TAKUMI Kojima　　　KOUTA Toda

修士課程一年　　　　修士課程一年

2023 年 11 月 23 日から 24 日にかけて，パタヤで開催された 34th KKHTCNN に参加した．本会議は京都大学 (Kyoto University)，韓国科学技術院 (Korea Institute of Science and Technology)，香港科技大学 (Hong Kong University of Science and Technology)，同済大学 (Tongji University)，チュラロンコン大学 (Chulalongkorn University)，シンガポール国立大学 (National University of Singapore)，国立台湾大学 (National Taiwan University)の計 7 大学により開催される国際シンポジウムである．本研究室では地盤系セッションにおいて，表 1 に示すタイトルで研究発表を行った．以下では発表時に頂いた質問と回答の内容を記載する．

表 1　発表論文タイトル

Teshome Birhanu	[GTE-5] Evaluation of the Performance of Road-Cross Section Constructed with Stabilized Soft Soil using Finite Element Analysis
Winfred Mutungi	[GTE-6] Numerical Simulation of Excess Pore Water Pressure Generation on a Single Pile Supported by a Thin Bearing Layer
西尾　美由莉	[GTE-5] Measurement and Accuracy Verification of Small-Scale Collapsed Slopes using Close Range Photogrammetry
Maxime Zabrodin	[GTE-2] Tensile Force Development on Soil Bag Models Investigated by DEM
小島　拓巳	[GTE-3] Experimental Study on Physical Properties of Pulp Fibers for Treatment of High Water-Content Mud
戸田　航太	[GTE-3] Full-Field Measurement of Vertical Distribution of Void Ratio and Degree of Saturation in Partially Saturated Triaxial Specimens

<u>Teshome Birhanu（D3）</u>

* 質問された内容

(a) From Assoc.Prof. Jiunn-Shyang Chiou (National Taiwan University)

Q: During numerical simulation what kind of properties do you use? It means for input parameters and explain your main reason to use similar soil model?

A: I used the strength and hydraulic conductivity properties of treated and untreated specimens as input parameters as shown on the slides. Regarding the soil model, I used soft soil model for the soft ground and Mohr coulomb soil model for all other soil profiles. Since we are focusing on the deformation based on the strength of the treated soil it's possible to use Mohr coulomb model for the analysis of improved soil.

* 質問した内容

・Structure Engineering 2

To Mr. Dawon Park (KAIST)

[Numerical Analysis of a Reinforced Concrete Slab Subjected to Blast Loading]

Q: On the numerical analysis of reinforced concrete slab subjected to blasting you showed as the experimental slab front and back side cracks. Do you have any mechanism that you measured the crack depth and width or quantitative analysis of the crack during the experiment?

A: The information which I explain on the slide is from previous research work, which is used in this numerical analysis. But the experimental work of detail crack analysis is not conducted in this research.

* 感想

Attending such a kind of conference gives a lot of opportunities to learn from other researchers' presentations and findings. For me it was also a good opportunity to network with different professionals, get different insights and feedback on my presentation. I would like to thank our laboratory professors Hashimoto sensei, Sawamura sensei and Kido sensei for giving me a chance to attend this international meeting.

<u>Winfred Mutungi（D2）</u>

* 質問された内容

(a)

Q: Is it possible to obtain the volumetric strain behavior, it can help us to understand the pore water pressure behavior?

A: Yes, the volumetric strain data is available, and it can be plotted to better understand the behavior of pore water pressure.

(b) From Prof. Kiyoshi Kishida (Kyoto University)

Q: You use one value of OCR for each layer, but when you apply some load during experiment the value may change, why do you fix to a single value?

A: In the experiment, the model ground thickness for each layer is not so large (about 160mm per layer), therefore a particular OCR value will be set at middle of the layer and it will be assumed to be the same over all the layer thickness.

* 質問した内容

・Structure Engineering 2

To Mr. Nathan Wenzel (National Taiwan University)

[Theoretical, Numerical, and Experimental Analysis and Design of Tube-Type Resonator Seismic Metamaterials]

Q: Which property of these metamaterials is important when it comes to seismic activity?

A: The metamaterials in the study have a high tendency to absorb seismic energy.

＊ 感想

    Attending this international conference was good for me. I was able to listen and learn from presentations by various students and professors in the diverse fields of civil engineering. I was also able to present my research activities and I got good comments which will help me improve on my work. Thank you to the lab for granting me this opportunity.

<u>西尾　美由莉（M2）</u>

＊ 質問された内容

(a)

Q: Isn't the tolerance of 0.1m too large? Do you mean that collapses within 0.05m cannot be measured? Wouldn't the use of a more expensive drone improve accuracy?

A: A tolerance of 0.1 m is acceptable for the design method handled in this study. It is certainly not possible to measure small slope deviations, but small deviations are not assumed in this study. Also, although an expensive drone might improve accuracy, this study aims to survey using inexpensive and easily available equipment, so such a study was not conducted.

＊ 質問した内容

・Geotechnical Engineering 5

To Ms. Kuei-Ying Chang (National Taiwan University)

[Preliminary study on kinematic behavior of an active large landslide using multi-temporal UAV investigation and digital image correlation analysis]

Q: What is the margin of error for measurements using the drone?

A: I don't know about the margin of error since I'm still experimenting, but I'm hoping to aim for about 0.1 meters, as was mentioned in your study.

＊ 感想

    初めての英語での発表ということでとても緊張し，質問に答えることができるかどうか不安であったが，発表後も他大学の教授とディスカッションをしたり，同じジャンルの研究を行っている学生と情報共有をしたりすることができ，とても有意義な時間を過ごすことができた．また，発表以外でも他大学の学生と交流を深めることができ，現地の文化についても教えてもらうことができたのは海外ならではの貴重な経験であった．他国の学生の研究への熱心な取り組みの姿勢を今後の修論執筆のモチベーションにしていきたい．

<u>Maxime Zabrodin（M2）</u>

＊ 質問された内容

(a) From Ms. Yoon Ah Kim (KAIST)

Q: Did you conduct any experiments?

A: Yes. I do not show here but, we could a good repeatability between the experimental results for load-displacement

relationship and a good agreement between the shape of the curves in experiment and simulation.

(b) From Session Chair man

Q: Why did you use 2D modelling? I am worried about the actual applicability of your research because in the real world, bags are not 2D.

A: Our experimental setup with aluminium rods and paper bag is very similar to our 2D model because in the simulation each particle is a cylinder with a unit depth and in the experiment, we're using aluminium rods which are also cylindrical with a 5cm depth, only the bag has been scaled in the simulation to save computational time.

＊ 質問した内容

・Geotechnical Engineering 2

To Ms. Yoon Ah Kim (KAIST)

[Root-inspired Flexible Anchor Design: Effect of Architectural Complexity on Pullout Performances]

Q: Which common criteria did you use to define the shape of roots for your cases?

A: The volume of the 3D printed material is the same for the roots in each case.

Q: Did you compare the pullout results of your tree root anchors with other more common shapes, such as just having a flat plate at the base?

A: The material we're using is flexible, so we are not ready to compare with other rigid systems but, in the future, we plan to have rigid roots and perform such comparisons.

・Sustainable Engineering 2

To Mr. Phattadon Khathawatcharakun (Chulalongkorn University)

[Retrofitting Selection on Construction Equipment to Reduce Emissions for Road Construction Projects]

Q: It should be difficult for engineers to accurately monitor emissions on-site so, can you recommend a factor, a stage, or critical range period during the construction where an analysis should be done on if retrofitting is required?

A: Yes, it is difficult to monitor on-site emissions. Optimistically retrofitting should be done as soon as possible for optimum performance, however we cannot define a period for it to be conducted it has to be checked case by case and engineers have to try to estimate based on knowledge of the equipment being used, such as age of the equipment and so on.

＊ 感想

　　It was my 1st participation in an international conference, so I got to learn a lot about the requirements and challenges. I received some questions, and I felt the topic was interesting to the participants. Overall this was my 2nd participation in a conference and I felt more comfortable and confident in having discussions with other participants.

　　I could interact with researchers from other countries and learn about their researchers. I also could gather some hints and ideas in their presentation styles.

　　I would like to leave a word of thanks to my Professors, colleagues whom participated in the conference with me and also Kyoto University staff who made this a possibility.

小島　拓巳（M1）

＊ 質問された内容

(a) From Session Chair man (Dianlei Feng Tongji University)

Q: Why is the compressibility increase?

A: Pulp and FSP is a material that compresses easily, so when mixed with soil, the resulting soil becomes more prone to compression.

Q: Between before water absorption and after absorption, does the properties of compressibility change?

A: No. The properties of compressibility does not change.

* 質問した内容

・Geotechnical Engineering 3

To Mr. Hyun June Kim (KAIST)

[Effect of pH on Clay-Bacteria interaction : sedimentation Study]

Q: When you culture bacteria in centrifuge, the temperature is 4℃. However, in the sedimentation test, the temperature is near 21℃. Why is the temperature different each other? It is better for the bacteria the temperature is low ?

A: I use Shewanella oneidensis MR-1, and this bacteria is often cultured near 4 Celsius, so I set the temperature is near 4 Celsius.
Next, I will change the distribution process from just sedimentation to the shaking sedimentation, but I will not change the temperature.

* 感想

　京大の先生方が見守ってくださる中ではあったが，自身初の国際学会での発表となり，大変緊張した．しかし，わかりやすいスライドを心掛け，また一つのスライドに対し伝えるべきメッセージを詳細に準備して臨んだ結果，特に大きなトラブルもなく，発表を乗り切ることができた．自身の発表後に，質問がなされた際には，聞き取ることが難しく，聞き返してしまったものの，質問の意味をかみ砕いた上で対応することができた．しかしながら，私自身が他の発表者の方に質問した際には，上手く聞きたい内容を英語で伝えることが難しかったこと，また海外大生の高い英語能力を実感したことで，自分自身の未熟さを強く実感する機会ともなった．
海外大生を交えた食事の際には，韓国の大学からやってきた学生との会話を試みたが，リスニング能力が未熟なため，高度な英語コミュニケーションをとることはできなかった．
今後も英語能力の向上を図り，より高度な英語会話ができることを目指したい．

戸田　航太（M1）

* 質問された内容

(a) From Mr. Hyun June Kim (KAIST)

Q: About slide 5, are there any difficulties, such as the distribution moving during CT imaging?

A: We could visualize the specimen clearly. Therefore, I think the distribution didn't move.

* 質問した内容

・Structure Engineering 6

To Mr. Ryoya Sugimoto (Kyoto University)

[Concatenation Bridge Weigh-in-Motion using Multiple Sensor Information]

Q: Why is the accuracy lower in the case of two lanes in one direction than in the case of two lanes in two directions?

A: In the one-way case, the shape of the influence line is more similar and the correlation coefficient is larger.

* 感想

　今回が初の国際学会への参加となり，英語での発表も自身初の経験となった．時間に対して発表内容の量が少なかったため，ゆっくりと余裕をもって発表することができた．しかし，英語での質疑応答などでは，聞き取りや応答に苦労し，自身の英語力の至らなさを実感した．今後，積極的に英語での会話に挑戦することで英語力を高めていきたい．また，飲み会などの場で他国の学生と交流することで互いの文化について知ることができ大変貴重な機会となった．