

FRIEDMAN FAMILY VISITING PROFESIONALS PROGRAM



Visit to University of Nebraska—Lincoln: April 18, 2024

This report summarizes the visit of **Mr. Ivan Wong** from Lettis Consultants International, that took place at the University of Nebraska—Lincoln on April 18, 2024.

ITINERARY OR AGENDA

TIME:	ACTIVITY:
8:00 AM – 9:00 AM	Student Chapter President meets & welcomes Visiting Professional to campus
9:00 AM – 10:00 AM	Tour of the structure and other lab facilities
10:15 AM – 10:30 AM	Break and preparation for the talk
10:30 AM – 11:30 AM	Presentation by Mr. Ivan Wong at the City Campus
11:30 AM – 12:00 PM	Q & A time and Informal conversation with the EERI student chapter
12:00 PM – 1:00 PM	Lunch with EERI student chapter officers
1:00 PM – 2:00 PM	Drive from Lincoln to Omaha
2:15 PM – 3:15 PM	Tour of Research laboratories at PKI with both the lab director and students
3:30 PM – 4:30 PM	Presentation by Mr. Ivan Wong at the Scott Campus
4:30 PM – 5:00 PM	Q & A time and informal conversation with the students
5:30 PM	Seen off by EERI local chapter representative, leaving the department

STUDENT CHAPTER VISIT PLANNING COMMITTEE

LEAD ORGANIZER(S): {enter name of student members who lead the visit, chapter role, email}

- {Saeid Ghasemi, President, sghasemigavabar2@unl.edu}
- {Seyed Mohammadreza Farooghi Mehr, Treasurer, sfarooghimehr2@huskers.unl.edu}
- {Mohammadreza Rajaei, Secretary, mrajaei2@huskers.unl.edu}

Faculty: {Dr. Christine Wittich, cwittich@unl.edu} and {Dr. Milad Roohi, milad.roohi@unl.edu}

VISITING PROFESSIONAL LECTURE OVERVIEW

Mr. Wong talked about the history of earthquakes that happened in the past 100 years. He went through both earthquakes that were recorded with instrumental and some historical earthquakes. Also, he explored each of the earthquakes by explaining their magnitudes, locations, types of faults, and seismic sources. Through these explanations, students understood which parts of the world are vulnerable to high-magnitude earthquakes. Some of the students asked some questions regarding the presentation, such as what the relationship between earthquake occurrence rates and the tectonic settings of different regions is. Mr. Wong addressed these questions by explaining the fundamental principles of plate tectonics and how the boundaries between different plates significantly influence the frequency and intensity of earthquakes. The session concluded with Mr. Wong emphasizing the importance of earthquake preparedness and the advancements in earthquake prediction technologies. He encouraged the students to learn more about local seismic activities and the safety measures that can be adopted to mitigate the impact of these natural disasters.



Lecture Abstract

The advancement in our understanding of earthquake hazards has been, in a large sense, a step-wise process with each step being a significant large earthquake. In the past three decades, the steps have been high because of improved technologies in instrumentation and simply because the earth has been willing to divulge its secrets at places most convenient for us to make visual observations, i.e., the earth's surface. Beginning with the 1989 moment magnitude (M) 6.9 Loma Prieta, California, earthquake there have been a string of notable events worldwide from which much has been learned. These events have provided us lessons in earthquake fault rupture behavior, strong ground shaking, surface fault rupture, liquefaction, and tsunami inundation and they have been significant in advancing our understanding and ability to predict the impacts of these earthquake hazards. Although none of these earthquakes has occurred within the central and eastern U.S., many of the lessons are applicable and have implications to seismic design. Two important occurrences of seismicity that have occurred in the central and eastern U.S. and are relevant to seismic design are the 2011 M 5.8 Mineral, Virginia earthquake and the surge in induced seismicity associated with wastewater injection in Oklahoma, Kansas, and Texas.

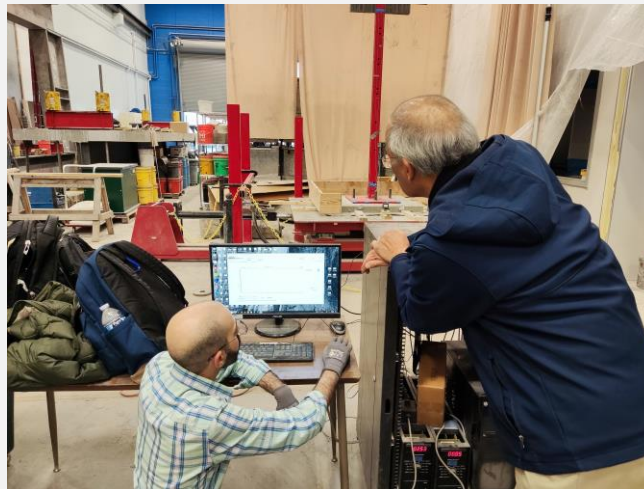
Professional Bio

Ivan G. Wong (M. EERI 1978) has been named a 2024 EERI Honorary Member in recognition of his significant contributions to earthquake engineering and seismology. Honorary membership of the Earthquake Engineering Research Institute is awarded to recognize members who have made sustained and outstanding contributions to the field of earthquake engineering and/or to EERI and the pursuit of its objectives. Wong is a Senior Principal Seismologist at Lettis Consultants International and an internationally renowned expert with nearly 50 years of experience. He has directed and participated in seismic hazard assessments and seismic design of more than 700 critical facilities. He has profoundly impacted research and practice for earthquake hazard reduction involving seismic geology, seismicity, seismotectonic, earthquake ground motions, seismic design criteria, probabilistic and scenario hazard maps, and seismic risk studies.

SUPPLEMENTAL ACTIVITIES

Tour of the structure

During this visit, Mr. Wong and some graduate students visited the shake table at the Civil and Environmental Engineering lab. In this session, a graduate student explained how all devices related to the shake table work. Next, He ran the shake table for two recorded earthquakes to show the seismic performance of a steel tower to observe flexible slide-rocking motion. Lastly, Mr. Wong asked a couple of questions regarding the equipment and dynamic behavior of the specimen.



Q & A time and informal conversation with EERI student chapter

In this session, some students attended and asked questions regarding earthquake engineering. They wanted to know how to implement earthquake engineering to have a safe society and some technical questions on seismic hazards and risks. Mr. Wong answered all questions, and there was an interactive conversation between students and Mr. Wong during this Q&A.

RESULTS, FEEDBACK AND LESSONS LEARNED

There was no special challenge during this visit. However, the UNL EERI student chapter is seeking supporting fund sources for future scholar visits.

Also, this student chapter believes that community and infrastructure resilience is among cutting-edge research topics. So, lectures by both experts in industry and academia on this topic would be a great opportunity.

ACKNOWLEDGEMENTS

The University of Nebraska—Lincoln EERI Student Chapter gratefully acknowledges the support of the Friedman Family for sponsoring the travel of Mr. Ivan Wong through their Friedman Family Visiting Professional Program endowment.

We extend our thanks to Dr. Lily Wang, the Dean of the Durham School of Architectural Engineering and Construction, for her support.

LIST OF ATTACHMENTS

Included at the end of this report are various attachments to supplement the information included above. A list of the attachments is included below:

- Item 1, i.e. flier for event
- Item 2, professional slide show or other handouts
- Item 3, other items



UNIVERSITY OF NEBRASKA-LINCOLN COLLEGE OF ENGINEERING



**Friedman Family Visiting Professionals Program
at University of Nebraska-Lincoln**



The latest and greatest in earthquake sciences and the implications to seismic design in the central U.S.

Thursday, April 18, 2024, 10:30-13:30 a.m.
Thursday, April 18, 2024, 3:30-4:30 p.m.

Location: TBD (City Campus)
Location: PKI 207 (Scott Campus)

Abstract

The advancement in our understanding of earthquake hazards has been, in a large sense, a step-wise process with each step being a significant large earthquake. In the past three decades, the steps have been high because of improved technologies in instrumentation and simply because the earth has been willing to divulge its secrets at places most convenient for us to make visual observations, i.e., the earth's surface. Beginning with the 1989 moment magnitude (M) 6.9 Loma Prieta, California, earthquake there have been a string of notable events worldwide from which much has been learned. These events have provided us lessons in earthquake fault rupture behavior, strong ground shaking, surface fault rupture, liquefaction, and tsunami inundation and they have been significant in advancing our understanding and ability to predict the impacts of these earthquake hazards. Although none of these earthquakes has occurred within the central and eastern U.S., many of the lessons are applicable and have implications to seismic design. Two important occurrences of seismicity that have occurred in the central and eastern U.S. and are relevant to seismic design are the 2011 M 5.8 Mineral, Virginia earthquake and the surge in induced seismicity associated with wastewater injection in Oklahoma, Kansas, and Texas.

Bio

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