

# FRIEDMAN FAMILY VISITING PROFESIONALS PROGRAM



## Visit to University of Illinois at Urbana-Champaign: April 25, 2022

This report summarizes the visit of **Mr. Ronald Eguchi** from ImageCat, that took place at the University of Illinois at Urbana-Champaign on April 25<sup>th</sup>, 2022.

### ITINERARY OR AGENDA

Provide the itinerary of the visit. For example:

TIME:	ACTIVITY:
8:45 AM – 9:00 AM	Karl Eid & Hongyu Wu pick up in Hyatt Lobby.
9:00 AM – 9:30 AM	Breakfast with EERI Student Chapter, Quade Lounge Conference Room, Newmark Laboratory
10:00 AM – 10:45 AM	Professor Bassem Andrawes, 3122 Newmark Laboratory
10:45 AM – 11:20 AM	Professor Ahmed Elbanna, 2219 Newmark Laboratory
11:20 AM – 12 PM	Professor Frank Lombardo, 3110 Newmark Laboratory
12:00 PM – 1:00 PM	Lunch at the Bread Company with EERI Student Chapter
1:00 PM – 1:30 PM	Lab Tour led by Mandy Zhong, Crane Bay & Bridge, Newmark Laboratory
1:30 PM – 2:10 PM	Professor Bill Spencer, 2213 Newmark Laboratory
2:10 PM – 2:45 PM	Professor Paolo Gardoni, 3118 Newmark Laboratory
2:45 PM – 3:15 PM	Professor Youssef Hashash, 2230E Newmark Laboratory
3:15 PM – 3:30 PM	Break
3:30 PM – 3:50 PM	Setup and preparation for Structural Engineering Seminar
4:00 PM – 5:00 PM	Structural Engineering Seminar given by Mr. Eguchi, 1310 NCEB
5:00 PM – 5:30 PM	Questions and Answers, group picture, exchange gifts.
5:30 PM – 5:45 PM	Hongyu drive Mr. Eguchi back to Hyatt Hotel.
5:45 PM – 6:30 PM	Mr. Eguchi rests up and prepares for dinner.
6:30 PM – 9:30 PM	Dinner at Big Grove Tavern with EERI Student Chapter

### STUDENT CHAPTER VISIT PLANNING COMMITTEE

#### LEAD ORGANIZER(S):

- Hongyu Wu, President, hongyuw3@illinois.edu
- Karl Eid, Graduate Student Advisor, karleid2@illinois.edu
- Prof. Bassem Andrawes, Faculty Advisor, andrawes@illinois.edu
- Prof. Youssef Hashash, Faculty Advisor, hashash@illinois.edu
- Dr. Paolo Gardoni, Director of Structural Engineering Seminar, gardoni@illinois.edu

### VISITING PROFESSIONAL LECTURE OVERVIEW

Mr. Eguchi's presentation focused on the Seismic Risk Evaluation of Water Supply Systems. Attendee response was enthusiastic with a myriad of questions.

## Lecture Abstract

A seismically-resilient water lifeline system is critical for ensuring effective post-event response and rapid community recovery after disastrous earthquakes. To design, construct, and maintain seismically-resilient water systems, it is crucial that the damage potential of a pipeline system be quantified in future earthquakes. Mitigation strategies to address known vulnerabilities are essential in ensuring that system performance goals and criteria can be achieved with available resources. To assess the damage potential of a large water pipeline network, the following factors must be addressed: regional seismicity, spatial distribution of earthquake-induced shaking, and ground deformation (event footprint) in future events, pipeline fragilities, and agency resources for emergency response. In this study, a large stochastic catalog of earthquake simulations, or an "event set," that adapts the Uniform California Earthquake Rupture Forecast, Version 3 (UCERF3) model is developed to represent the regional seismicity of the Los Angeles Basin. Random event footprints for each earthquake simulation are constructed by utilizing empirical ground motion models (GMMs) that are consistent with the 2014 United States Geological Survey (USGS)'s National Seismic Hazard Mapping Project (NSHMP). This set of earthquake simulations captures the large uncertainties in seismic hazard models than simplified methods and is utilized to evaluate system-level consequences for the entire City of Los Angeles water pipeline network, measured by the total number of pipeline repairs and subsequent repair costs and times due to strong ground shaking and ground deformations. These estimates of damage and impact are based on empirical pipeline fragility models and restoration data from two past events that affected the water system in the past (1971 San Fernando and 1994 Northridge Earthquakes). System-level performance is then evaluated at various targeted probability levels and influential seismic sources are identified. This study was performed as part of a long-term program administered by the City of Los Angeles Department of Water and Power to quantify and ultimately enhance the seismic resilience of all city trunklines and distribution pipelines.

## Professional Bio

Mr. Eguchi is President and CEO of ImageCat, Inc., an international risk management company that supports the global risk and catastrophe management needs of the insurance industry, governments and NGOs. Mr. Eguchi has over 30 years of experience in risk analysis and risk reduction studies. He currently serves or has served on several editorial boards including EERI's Journal SPECTRA. In 1997, he was awarded the ASCE C. Martin Duke Award for his contributions to the area of lifeline earthquake engineering. In 2006, he accepted an ATC Award of Excellence on behalf of the ATC-61 project team for work on An Independent Study to Assess Future Savings from Mitigation Activities that showed that a dollar spent on hazard mitigation saves the nation about \$4 in future benefits. He was recognized by EERI as the 2008 Distinguished Lecturer where he discussed the topic of "Earthquakes, Hurricanes, and other Disasters: A View from Space." In 2015, he founded the Technical Committee on Advances in Information Technologies for the SEI Division of ASCE. He has authored over 300 publications, many of them dealing with the seismic risk of utility lifeline systems and the use of remote sensing technologies for disaster response. He was awarded the 2017 Civil & Environmental Engineering Department Distinguished Alumnus Award from UCLA.

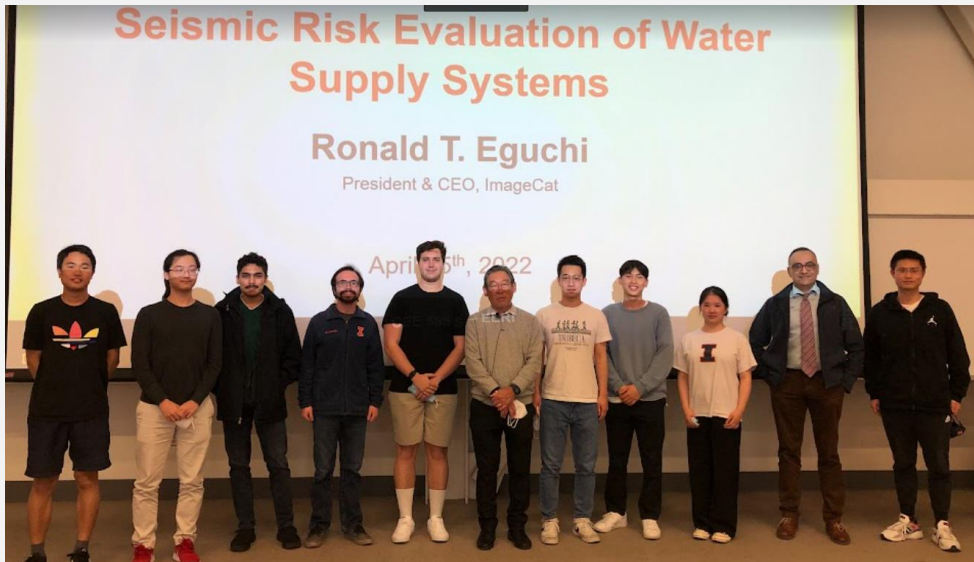


Figure 1. Mr. Eguchi and the EERI Chapter after the seminar

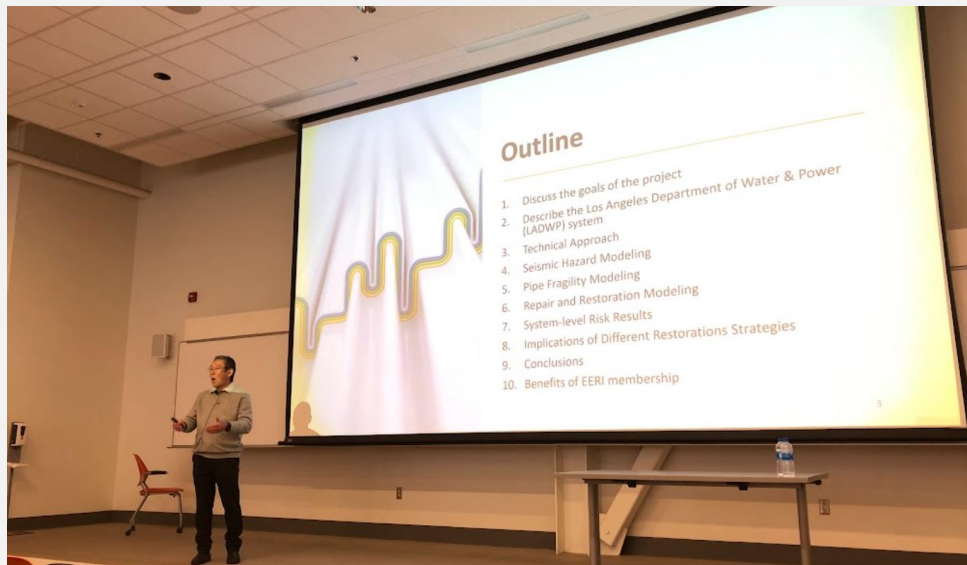


Figure 2. Mr. Eguchi during the seminar

## SUPPLEMENTAL ACTIVITIES

### Breakfast with EERI Board members

We had breakfast with Mr. Eguchi and his son. It was a very nice way to introduce him to many members of the student chapter in an informal setting.

### Dinner with the EERI Board members

We concluded the day with a dinner. We had a number of other board members get the chance to meet with Mr. Eguchi and his son, and to learn from their experience.



Figure A1. Mr. Eguchi, Prof. Andrawes and the EERI Board Members at Dinner

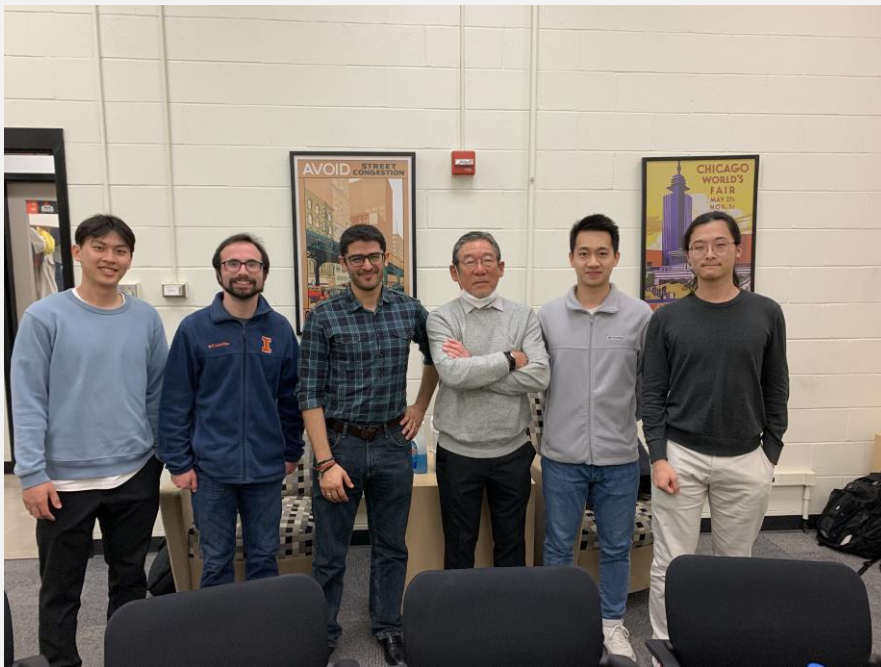


Figure A2. Mr. Eguchi, and the EERI Board Members at Breakfast

## ACKNOWLEDGEMENTS

The University of Illinois at Urbana-Champaign EERI Student Chapter gratefully acknowledges the support of EERI for sponsoring the visit of Mr. Ronald Eguchi through the Friedman Family Visiting Professional Program.