

2014-2015 ANNUAL REPORT

Rice University Student Chapter of the Earthquake Engineering Research Institute



Report Date: June 04, 2015

This report summarizes the membership and activities conducted by the Rice University Student Chapter of the Earthquake Engineering Research Institute during the academic year 2014-2015.

MISSION & GOALS

As Rice University is located in HOUSTON, earthquakes may not have pre-eminence in our minds like hurricanes do, but we are in the UNITED STATES and a GLOBAL community. Natural disasters of all kinds need addressing by our burgeoning engineers. Thus we in the EERI-RU organization aspire to bring awareness to our community and provide outreach to young students in high-schools and middle schools.

MEMBERSHIP

The Rice University Student Chapter had a total of 12 members in 2014-2015.

OFFICERS

The Board consisted of the following members:

Role	Name	EERI Member Number	Email	Student Status
President	Mihaela Nistor	15822	mn17@rice.edu	Graduate student
Vice President	Sabarethinam Kameshwar	15696	sk56@rice.edu	Graduate student
Treasurer	Zhilu Lai		zl27@rice.edu	Graduate student
Secretary	Debarshi Sen	17204	ds44@rice.edu	Graduate student

FACULTY & INDUSTRY ADVISORS

Advisor type	Name	Institution	Affiliation	Email
Faculty	Dr. Jamie Padgett	Rice University	Associate Professor	jamie.padgett@rice.edu
Industry	Dr. Douglas Nyman	D.J. Nyman & Associates	Principal Engineer	nymandj@djna.com

MEMBERS

A complete list of members is shown below.

Name	EERI Member Number	Email	Student Status
Zeyang Cao	17567	zeyangcao@me.com	Graduate student

Ningxin Cheng	17662	ningxin.cheng@gmail.com	Undergraduate student
Majid Ebad-Sichani	17902	me15@rice.edu	Graduate student
Yutian He	17664	heyutian92@gmail.com	Undergraduate student
Sabarethinam Kameshwar	15696	sk56@rice.edu	Graduate student
Ishan Nayak	17654	in3@rice.edu	Undergraduate student
Damien Ng	17578	yn12@rice.edu	Undergraduate student
Mihaela Nistor	15822	mn17@rice.edu	Graduate student
Roger Parades	17665	rlp4@rice.edu	Graduate student
Debarshi Sen	17204	ds44@rice.edu	Graduate student
Navya Vishnu	18105	nv7@rice.edu	Graduate student
Reginald Wang	17657	rhw2@rice.edu	Undergraduate student

BUDGET & FINANCIALS

Sponsor Name/Organization	Contact Person	Amount
Rice University		\$500

CHAPTER ACTIVITIES

REGULAR CHAPTER MEETINGS

EERI-RU Info Session (September 18, 2014)

This was an info session for EERI –RU student chapter members and prospective members. At the event we discussed the agenda for this year, introduced the new office bearers and also encouraged undergraduate students to form a team to participate in this year's EERI Seismic Design Competition. The event fostered interaction and networking between graduate and undergraduate students. The event was also used as a platform to get new suggestions and ideas for this year's activities. See attached Figure 1.

EERI-RU Seminar Session (October 16, 2014)

Dr. Leonardo Duenas-Osorio, Associate Professor, Rice University, was invited to present his ongoing research on Performance and Restoration Assessment of Interdependent Infrastructure Systems Subjected to Seismic Hazards. It was an interactive session between Prof. Duenas and the students in attendance, where he shed light on the challenges faced when dealing with interdependent infrastructure systems for performance assessment. See attached Figure 2.

EERI-RU Seminar Session (November 13, 2014)

Ms. Lu Chen, Graduate Structural Engineer, ARUP and an alumnus of the Department of Civil and Environmental Engineering of Rice University, was invited to shed light on various challenges faced by ARUP in the field of Seismic Engineering. See attached Figure 3.

EERI-RU End of Year Session (June03, 2015)

The meeting summarized the activities of the student chapter for the year 2014-15 and the new officers for year 2015-16 were elected. Following are the new officers:

President: Sabarethinam Kameshwar

Vice-president: Zhilu Lai, Debarshi Sen

Treasurer: Navya Vishnu

Secretary: Roger Parades

Also, we discussed the future plan of action for the Seismic Design Competition.

FRIEDMAN FAMILY VISITING PROFESSIONAL or DISTINGUISHED LECTURE VISIT (April 20, 2015)

The student chapter at Rice University was selected to host Mr. David Friedman, Senior Principal, Chair of the Board of Directors, and immediate past President and CEO of Forell/Elsesser, San Francisco, CA, for the EERI Friedman Family Visiting Professionals talk. EERI-RU president Mihaela Nistor and vice-president Kameshwar Sabarethinam received him. He met with the faculty of Civil Engineering at Ryon Lab and was given a tour of Ryon Lab and Rice campus by Mihaela and Kameshwar. This was followed by an informal and interactive lunch session with students only where Mr. Friedman shared his story and experience from his time as an undergraduate student to what he has achieved till date. Subsequently, he made a presentation to the students and faculty discussing about the skills with which today's structural engineers should be equipped for a successful career. Of particular interest to faculty and students alike, was his candid definition of structural engineering. See attached Figures 4 and 5.

K-12 Outreach Activity

The EERI-RU student chapter, in association with Dr. Jamie Padgett (our faculty advisor), organized an outreach activity for middle school children. The main objective was to create excitement among school students about college and it also showcased their creativity and curiosity. As a part of this outreach activity, a bridge making competition was organized. Groups of students were provided with bridge modeling kits to make a truss bridge which were later tested by loading with weights. The offices provided assistance to organize the competition and interacted with the students to help them to build their bridge models. See attached Figures 6 and 7.

SEISMIC DESIGN COMPETITION TEAM

Seismic design competition (SDC) is one of the major activities that the undergraduate students from the department of Civil and Environmental Engineering participate in. The preparations for SDC begin early fall with recruitment of new students to the team. Even before the problem statement is released the students start learning finite element packages such as SAP2000, which are used to model the building. As soon as the problem statement is released, the team starts working on the conceptual design and the proposal. Following the initial stages of conceptual design the team works on finalizing the design and starts to build the physical model for the competition.

SDC Team Members

A complete list of members is shown below.

Name	EERI Member Number	Email	Role
Zeyang Cao	17567	zeyangcao@me.com	Team captain

Ningxin Cheng	17662	ningxin.cheng@gmail.com	Architectural aspects and model construction
Yutian He	17664	heyutian92@gmail.com	Architectural aspects and model construction
Ishan Nayak	17654	in3@rice.edu	Model construction
Damien Ng	17578	yn12@rice.edu	Modeling in SAP2000 and model construction
Reginald Wang	17657	rhw2@rice.edu	Model construction

SDC Team Financial Sponsors

A list of financial sponsors for the SDC team.

Name	Email	Amount	Note
Rice University		\$7250	Different departments and organizations inside Rice sponsored the SDC team

Team results and lessons learned

The Rice University Student Chapter SDC team was able to secure 9th position in their second attempt at the competition. The structural performance was excellent; the structure performed very well for all the three earthquakes and did not sustain any damage at all. Even though the structural performance was excellent the team lost points due to few violations, lack of sufficient revenue and lack of accuracy in response predictions. Therefore, for next year the focus of the team will be to avoid violations, maximize revenue and more accurate response prediction.

ELECTION & ELECTION RESULTS

An election for officers for the 2015-2016 academic year was held in June 2015. The table below shows the new officers appointed to the Chapter board who will take office on August 2015.

Role	Name	EERI Member Number	Email	Student Status
President	Sabarethinam Kameshwar	15696	sk56@rice.edu	Graduate student
Vice President	Zhilu Lai		zl27@rice.edu	Graduate student
Vice President	Debarshi Sen	17204	ds44@rice.edu	Graduate student
Treasurer	Navya Vishnu	18105	nv7@rice.edu	Graduate student
Secretary	Roger Parades	17665	rlp4@rice.edu	Graduate student

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, Pictures from various events
- Item 2, Event Flyers

Item 1: Pictures from various events



Figure 1: Students at the EERI RU info session, September 2014



Figure 2: Professor Duenas presenting his research to the students, October 2014



Figure 3: Ms. Lu Chen discussing the challenges faced by ARUP, November 2014



Figure 4: CEVE students and faculty listening to Mr. Friedman, April 2015



Figure 5: CEVE Students and Faculty with Mr. Friedman after the presentation, April 2015

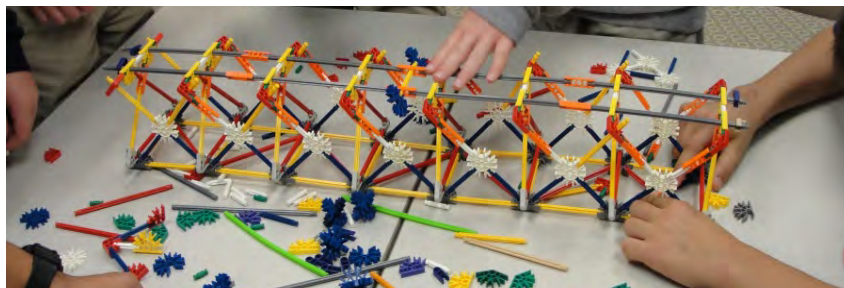


Figure 6: Middle school students building a bridge during the K-12 outreach activity



Figure 7: The winning team at the K-12 outreach activity bridge design competition with their loaded bridge

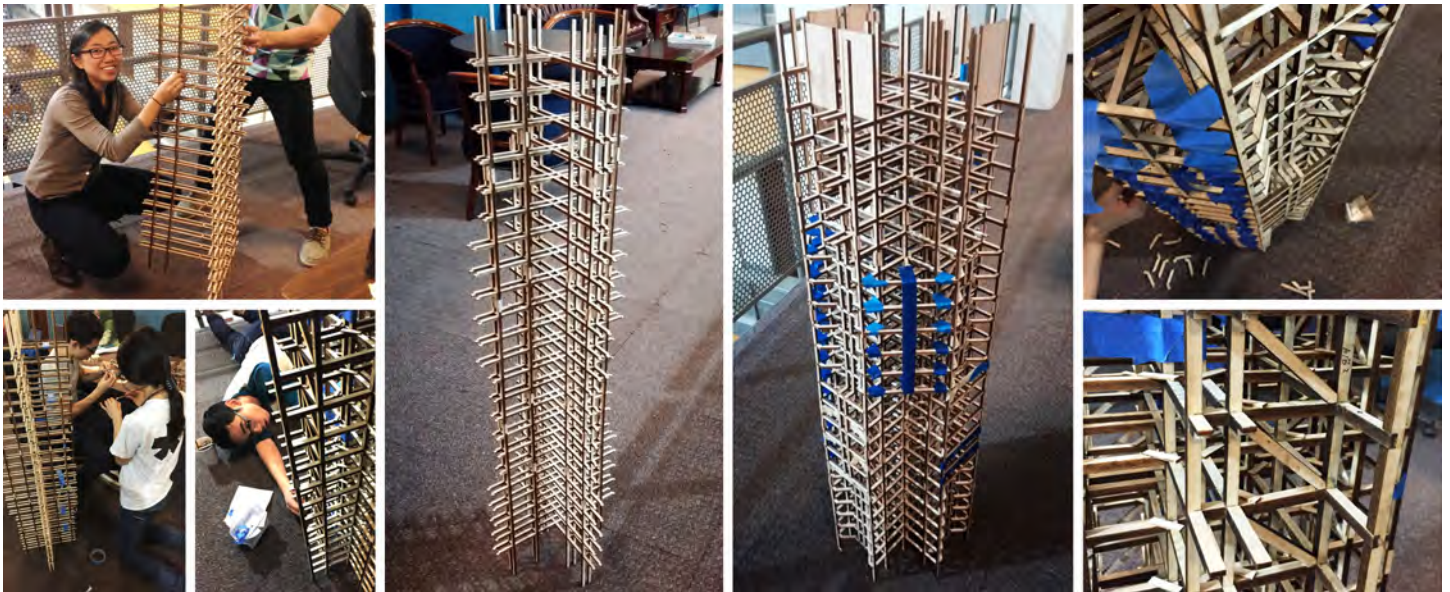


Figure 8: Seismic Design Competition pictures

Item 2: Event flyers (continued on next page)

Earthquake Engineering Research Institute

September 18th 2014

12:00 – 1:00 pm

Ryon 201

1st Meeting – Info Session

Undergraduate Seismic design
competition

Free Food!!



EERI Seminar Series

Leonardo Dueñas-Osorio, Ph.D.

Associate Professor, Dept. of Civil and Environmental Engineering
Rice University

Thursday, October 16, 2014, 12:00 P.M.

201 Ryon Lab

Free food will be provided!

Performance and Restoration Assessment of Interdependent Infrastructure Systems Subjected to Seismic Hazards

Abstract:

Understanding critical infrastructure systems, including their interactions, performance, restoration, and evolution, is one of the most significant challenges for societies today, as built systems age, service demands grow, and resources for their operation and management shrink. Infrastructure systems, such as power, water, and telecommunication networks among others, exhibit complexities that test the limits of existing performance assessment methods given their distributed nature, large scale, and heightened exposure. In this presentation, some of the salient features of infrastructure systems, starting with their interdependence, are explored from the perspective of their probabilistic response to seismic hazards and optimal interface design. The lessons learned from computational and analytical models for performance and restoration assessment, as well as from field observations in the past decade are highlighted, including lessons that appear counterintuitive at first. Insights observed across different lifeline systems show that interdependencies enable optimal functionality of utility systems during normal operation, but also amplify lifeline system loss of performance during disruptive events, or in many cases delay restoration processes. In addition, interdependencies are seen to only be critical for lifeline system performance at specific ranges of hazard intensity levels, while the strategies for controlling interdependence effects propagation must range from a mix of component strength and capacity increases, to the modification of the interface that enables different lifeline systems to interact. These intricacies of interdependence are consistent across scenario events and also after convolving seismic hazard with network level fragility at the regional level, thus confirming that interdependencies can steer risk- and resilience-based decision making. Practical examples of the advances in infrastructure engineering and their impact on decision making and resilience will be presented, along with lessons learned from recent earthquake events with evidence of operational, logistical, and geographical interdependence.



Rice University EERI Chapter



EERI Seminar Series

Lu Chen, M.S.
Graduate Structural Engineer
ARUP

Seismic Engineering Challenges Throughout ARUP's Projects

Thursday, November 13, 2014

12:00 – 1:00 P.M.

201 Ryon Lab



Free food will be provided!



Earthquake Engineering Research Institute- Rice University Student Chapter
*In coordination with Department of Civil and Environmental Engineering and
The Friedman Family Visiting Professionals Program*

SPECIALTY SEMINAR

David Friedman
Senior Principal, Chair of the Board of Directors,
and immediate past
President and CEO
Forell/Elsesser, San Francisco, CA

Monday, April 20, 2015

3:45 PM

Ryon Lab 201

Abstract: The practicing structural engineer today must have a broad understanding of not just structural engineering, but must be knowledgeable about architecture, M/E/P systems, construction delivery methodologies, and the construction process. All projects come with their own litany of challenges and constraints, and the structural engineer is one of the key players in achieving the optimal solution: The project's budget, the selected performance and design criteria, the architectural form, and the operating systems all affect the selection of the appropriate structural materials and lateral force resisting system. Then the analysis must get translated into a design, and the design must clearly and carefully be delineated into construction documents including plans, details, sections and technical specifications, with appropriate attention to sequencing, phasing and constructibility. This all gives rise to the notion of today's structural engineer as a "Master Builder", one who can articulate their way through a complex labyrinth of form finding, criteria setting, risk evaluation, design and documentation, and construction.

Bio: David Friedman serves as Senior Principal, Chair of the Board of Directors, and immediate past President and CEO of Forell/Elsesser in San Francisco, CA. He brings with him the experience of more than 34 years at Forell/Elsesser and almost 40 years in the industry, His particular strength is in holistic approaches to project planning, design and construction, and the collaborative integration of creative structural solutions with architects, engineers, and builders. With a specialty in designated historic structures, David has creatively solved numerous engineering challenges. Principle examples of his solutions include the base isolation retrofits for both the San Francisco City Hall and Asian Art Museum, the adaptive reuse and retrofit for the San Francisco Conservatory of Music, and the seismic safety corrections and remodel of UC Berkeley's California Memorial Stadium.