Teaching with Virtual Reality
Smart Water Systems
Talking Trash in Jakarta
Gift Establishes Endowed Chair
Dear CEE Alumni and Friends,

New discoveries and technological advances continue to expand the body of knowledge needed and career opportunities for civil and environmental engineers. As the department adapts to these needs with new course content and innovative learning tools, such as virtual reality (p. 6), one thing is constant – every year we send off a talented group of graduates who join an incredibly loyal and successful alumni base. As our 2015 graduates embark on the next phase of their life, they will find, as many before them have, that a CEE degree from U-M will serve them well for many years to come.

An ample illustration of this point is given in our alumni spotlight section (p. 23-26) in which we highlight the career paths of six CEE graduates who share compelling stories of what a U-M degree has meant to them. With the environmental impacts of climate change (p. 7, Investigating the Amazon Rainforest) and the advances in intelligent infrastructure systems (p. 8, Smart Water Systems), it is encouraging to know that CEE graduates are prepared to address society's challenges.

From promoting zero waste events at U-M (p. 12) to addressing the pollution of rivers in Indonesia (p. 10), CEE students are finding ways to enhance the quality of life on campus and throughout the world.

Our faculty growth continues: Dr. Glen Daigger joined CEE in July 2015 as a Professor of Engineering Practice. Glen came to us from CH2M Hill following a distinguished career that included his induction in the National Academy of Engineering (p. 4).

Sadly, former CEE Professor Victor Streeter passed away in April 2015 (p. 28). Among his many accomplishments, Dr. Streeter wrote three highly regarded textbooks in fluid mechanics and hydraulics engineering. He will be missed, but not forgotten – the Victor Streeter Laboratory in the EWRE building remains a testament to his legacy in research and education.

Honor and awards for the community were aplenty once again this past year. Faculty awards include the ASCE James R. Croes Medal for Assistant Professor Seymour Spence, the ASCE Casagrande and Middlebrooks Awards for Associate Professor Adda Athanasopoulos-Zekkos, and the ASCE Huber Prize for Professor Vineet Kamat. Professor Nancy Love was selected for the AEESP Lectureship, and Professor Jim Wight received the ACI Charles S. Whitney Medal. Our students (p. 14-15) and staff members (p. 29-30) also received well-deserved recognitions for excellence.

In its third year, the Victors for Michigan Campaign continues to bring in much needed support. I am deeply grateful for the generosity of our alumni and friends. Of particular note, the Malloure Family established the Donald Malloure Department Chair of Civil and Environmental Engineering (p. 30-31) with a generous $2M gift. I am honored to be the inaugural recipient of this Chair Endowment.

I would also like to acknowledge those who give their time to CEE by participating in the CEEFA Board. This year the board by-laws were modified to increase the number of board directors from ten to twelve, and four new members were elected, including board vacancies. John Hilts stepped down as President in June. I would like to thank him for his many years of service. With Jim Jacobi stepping in to fill the Presidency (p. 22) and Jim Fausone as the new Vice President, the leadership of CEEFA is in good hands.

I invite you to visit the CEE website for up to date news, highlights and videos (p. 34), and to learn about the many ways to stay connected. If you wish to reconnect or volunteer your services in support of CEE, please contact me or other members of our CEEFA Board. I wish you a peaceful and successful year! If your travels bring you to Ann Arbor, please stop by and say hello.

Regards,

Kim F. Hayes, Ph.D.
CEE Professor and Chair
cee-chair@umich.edu (734) 764-8495
In This Issue

FEATURES

Teaching with Virtual Reality 6
Prof. El-Tawil develops an innovative teaching approach.

Investigating the Amazon Rainforest 7
Prof. Ivanov aims to understand how the forest responds to climate variations.

Smart Water Systems 8
Prof. Kerkez is building a smart stormwater control framework.

Composting on Campus 12
Students coordinate Zero Waste events throughout U-M.

Talking Trash in Jakarta 13
Alumnus Frank Sedlar studies flooding in Indonesia.

DEPARTMENTS

New Faculty 4
Faculty Honors 10
Student Honors 14
Student Organizations 16
Alumni Events 21
CEEFA President’s Letter 22
Alumni Spotlights 23
In Memoriam 27
Department History 29
Department Updates 30
Staff Honors 33
Coming Events 35
NEW FACULTY

Glen Daigger

DR. GLEN DAIGGER, retired CH2M HILL Chief Technology Officer, recently joined the department as a Professor of Engineering Practice.

The professor of engineering practice track is designed to engage highly skilled engineering talent in research and teaching, and to give students the opportunity to learn from leaders in the commercial and governmental world of engineering design and analysis.

As a faculty member in CEE, Daigger will contribute to the teaching of practice-oriented courses and provide leadership in the pursuit of Center-scale national and international research and education initiatives, while also maintaining strong ties with professional practice.

Daigger, recognized worldwide as an expert in wastewater treatment technologies, has contributed significantly to the entire water industry, most recently through his work as president of the International Water Association (IWA), where he worked with water leaders around the globe to advance the science and practice of water management to create more livable cities and accelerate the rate at which people gained access to drinking water and sanitation, all while protecting the environment. He will continue serving IWA as immediate past president of the association.

Daigger has also served in senior roles for the Water Environment Federation, the American Academy of Environmental Engineers and Scientists, and the Water Environment Research Foundation. Daigger is a member of the National Academy of Engineering and received the Harrison Prescott Eddy Award from the Water Environment Federation three times. As the author or co-author of more than 200 technical papers, four books, and several technical manuals, Daigger has also contributed to advancing practice within the wastewater profession. His eleven patents for wastewater treatment processes have helped establish the nation's wastewater treatment standards.

Throughout his years at CH2M Hill, the nation's largest wastewater treatment firm, Daigger has helped to solve a number of problems — big and small. He was named the company's first director of the Office of Innovation, which championed creative solutions and processes. Early in his career, a wastewater treatment plant in Virginia Beach proved to be particularly rewarding from an innovative standpoint. The project resulted in the development of a new biological phosphorous and nitrogen removal process, termed the “VIP process,” which also led to a patent.

Daigger received his doctorate and master's degrees in environmental engineering from Purdue University, as well as his bachelor's degree in civil engineering from Purdue. In 2012, he was named a Purdue University Distinguished College of Engineering Alumnus. Daigger joined CH2M HILL in 1979 and was the firm's first Technical Fellow, an honor which recognized the leadership that he provided for CH2M HILL and for the profession in the development and implementation of new wastewater treatment technology.

Daigger joined the department on July 1, 2015.

Dr. Daigger speaking at the 5th International Conference on Microbial Ecology and Water Engineering, held in Ann Arbor in July 2013.
New CEEFA Board Members

John C. Crittenden (BSE ChE ’71, MSE CE ’72, PhD CE ’76) is the director of the Brook Byers Institute for Sustainable Systems and a Professor in the School of Civil and Environmental Engineering at the Georgia Institute of Technology. He holds the Hightower Chair and is a Georgia Research Alliance Eminent Scholar in Environmental Technologies. Since 1998 he has been the Associate Editor of the Journal Environmental Science and Technology. Prof. Crittenden was elected to the National Academy of Engineering in 2002 and the Chinese Academy of Engineering in 2013. He is the co-holder of five patents and the primary author of the text book, Water Treatment: Principles and Design, now in its third edition.

Stephen R. Guidos (BSE CE ’83) is principal and director of development for Cunningham-Limp Development Company. Since 1989 he has directed Pre-Construction Services and Construction Operations. Currently he focuses on new business opportunities and real estate evaluation, acquisition and development. Additionally, he is a partner with the Indian Hill Company whose mission is the urban renewal of the Pontiac “Loop.” He contributes his expertise to community and social enterprise organizations such as Impact3, Life Remodeled and Oakland Family Services.

Tara Jackson (MSE EnvE ’07) is the operations team lead on the Blind Faith 2 Project, a major capital project at Chevron Corporation in the Gulf of Mexico strategic business unit. She began her career at Chevron in 2008 as an environmental specialist in the Upstream Capability Operating Company and transitioned to a field environmental role in the Mid-Continent / Alaska business unit. Then she worked as a health, environment, and safety advisor on a large Southern Africa strategic business unit major capital project. She enjoys volunteering as a tutor and speaking to youth about the vast career opportunities in the energy industry. Ms. Jackson will receive her MBA from the University of Texas Red McCombs Business School (expected May 2016).

Kenneth Loh (MSE CE ’05, MSE MatSci ’08, PhD CE ’08) joined the Department of Civil & Environmental Engineering at the University of California, Davis as an assistant professor in 2009 and was promoted to associate professor with tenure in 2014. He was also a U.S. Fulbright Scholar in Taiwan and visiting associate professor in the Department of Civil Engineering at the National Taiwan University in 2014. His research interests include multifunctional materials, nano-engineering, composite materials, biologically inspired systems, and resilient structures. Loh’s recent honors include the Achenbach Medal, NSF CAREER Award, Joseph Wang Award, SPIE Senior Member honor, and several best paper awards.
Teaching with Virtual Reality

MANY UNIVERSITIES AROUND the world make use of the traditional "steel sculpture" to teach structural engineers the various connections that can be made by structures. But with 50 connections of various shapes and sizes, the sculpture itself can be quite large, stationary and difficult to view with great detail.

To improve upon these limitations, a team led by Professor Sherif El-Tawil developed a virtual reality (VR) environment that allows students to visualize complex spatial arrangements.

The team, which includes El-Tawil, Associate Professor Jason McCormick, and Doctoral Student Julie Fogarty, as well as Eric Maslowski and Theodore Hall from the U-M 3-D Lab, won the U-M Provost’s 2014 Teaching Innovation Prize (TIP). This prize honors faculty who have developed innovative teaching approaches.

The group’s project is titled, “Exploring Complex Spatial Arrangements and Deformations in Virtual Reality.”

VR is an immersive environment, where users wearing the proper equipment can ‘climb’ up a model, ‘squeeze’ through an opening, or ‘fly’ up for an overview, thereby, experiencing the size and extent of important features in a natural and intelligible way. A VR approach in which the student is immersed in an interactive environment specifically designed for educational purposes offers many additional advantages over traditional teaching techniques. The VR interface allows for more realistic visualization and experimentation, providing a great opportunity for clarifying complex engineering topics.

Most importantly, VR technology is appealing to students, and is expected to attract and maintain their interest because of its game-like qualities.

In the future, El-Tawil would like to extend VR technology to allow users to ‘physically’ interact with the model being presented. For example, engineering students looking at a building could actually ‘poking’ it to see how it moves when pushed or subject it to a strong earthquake to see it shaking. This will allow students to see, hear and touch what they are trying to learn about in ways that were not possible in the past.

This project is featured in an MConneX video titled, “Using virtual reality to train future engineers.” Please visit https://www.youtube.com/watch?v=1VljYWASwXI to watch it.
IN THE BRAZILIAN Tapajós National Forest, Associate Professor Valeriy Ivanov is making measurements that aim to solve some of the scientific puzzles held in the 5.5 million square kilometers of the Amazon rainforest.

The puzzle he is trying to understand is the photosynthesis and plant water uptake responses to climate variations, such as drought. Photosynthesis is the process used by plants to convert light energy into chemical energy, later to be released to fuel the plant’s activities; and root water uptake is a co-occurring process that profoundly affects soil moisture and vapor flow into the atmosphere.

Currently, the photosynthesis measurements made at monitoring sites in the Amazon do not match up with the simulations from numerical models of the Earth system, nor do they consistently agree with data inferred from observations by Earth-observing satellites.

Ivanov’s project is designed to resolve disagreements between the computer models and actual forest measurements by developing new knowledge and deeper understanding of seasonal climate, photosynthesis, and water relationships in Amazon tropical forests.

Two major droughts within the past ten-year period increased mortality of the largest trees in the Amazon forest, and several models predict there will be more severe droughts in the future. This is alarming because the forest absorbs carbon dioxide. Carbon dioxide is considered a greenhouse gas, meaning it traps heat in the atmosphere. By absorbing it, the Amazon helps reduce global warming. The co-occurring release of water vapor regulates the precipitation regime in the region and impacts global process of water redistribution. If the Amazon were to lose many of its trees due to a drought, the world would lose one of its carbon sinks with unpredictable consequences to precipitation processes around the world.

“If the forest goes down, it’s not just going to impact Brazil. It will have global implications,” Ivanov says. This is one of the reasons why scientists seek to understand how the forest has adapted for and reacts to droughts and other climate variations.

To do this, Ivanov and scientists from the U.S. Geological Survey, the University of Arizona and the University of Technology, Sydney (Australia) will measure the physiological properties of leaves, stems, roots, and water flows within trees.

“We’re trying to create better models that reflect the physical processes,” Elizabeth Agee, one of Ivanov’s doctoral students, says.

The researchers will also use remote-sensing instruments to monitor the light-reflecting properties of the forest and the effects of clouds and smoke on solar radiation, which is radiant energy emitted by the sun.

By gathering data that can improve the models for tropical forest photosynthesis and related water-cycle processes, this study will help improve the reliability of global climate forecasts.

Two graduate students, Greg Ewing and Chase Dwelle, have traveled to Brazil to participate in the project by installing and monitoring sap flow sensors.

Working in the Amazon is not for the faint of heart. Some of the challenges the students experienced included stumbling upon bushmaster snakes, intense heat and humidity and not having materials readily available. But it was not all bad. At the end of the day, their hard work was rewarded with bowls of fresh acai smoothies, which they say are unlike any of the acai smoothies you’ll find in the U.S.

In August 2015, Agee will make the trip to the forest, which requires three flights from Michigan.

The study is scheduled to run for three years and is supported by the U.S. Department of Energy’s GOAmazon campaign.
THE GREAT LAKES are the world's largest freshwater system and they provide an estimated 1 trillion gallons of water daily for human use. In recent years, however, there have been instances when those who rely on the Great Lakes for water had to find another source.

In August 2014, the City of Toledo warned approximately 500,000 people that their water was not safe to use. In September 2013, the Ohio community of Carroll Township suspended water use for 2,000 residents. From algal blooms to invasive zebra and quagga mussels, the Great Lakes are facing challenges and it is impacting all who rely on them.

This is where the Great Lakes Protection Fund comes in. For more than twenty years, this fund has supported projects with the goal of improving the health of the Great Lakes region. One of these projects is led by Assistant Professor Branko Kerkez. Kerkez is developing a smart stormwater control framework that, when deployed at scale, will reduce urban flooding and the occurrence of combined and sanitary sewer overflows. This will simultaneously improve the water quality of the Great Lakes and their tributaries, as well as reduce urban flooding, an all too common occurrence in cities across the Great Lakes.

How will it work? The first step is to better understand how stormwater impacts urban watersheds by using sensors, at unprecedented spatial and temporal resolutions, to gather data on when, where and how much water is coming in from storms. Using this data, researchers can develop real-time algorithms that will establish relationships between a number of meteorological, hydrologic and hydraulic variables.

"The big frontier is to understand how today's big cities will impact, and be impacted, by water," Kerkez says. "We use novel wireless sensing technologies as a tool to study these systems at massive scales."

With these algorithms in place, the team will be able to figure out the best possible plan for operating stormwater assets (such as sump pumps, rain barrels and stormwater outlets) given real-time conditions. The computing framework will be dynamic and will evolve over time.

"We need to recalibrate models..."
and collect data all the time, as opposed to relying on sparse historical observations to guess what will happen in the future,” Kerkez says.

"THE BIG FRONTIER IS TO UNDERSTAND HOW TODAY’S BIG CITIES WILL IMPACT, AND BE IMPACTED, BY WATER."

Through optimal use of storm water assets, cities will be able to reduce occurrences of localized flooding and resulting water quality impairments. For example, by placing real-time controllers into storm pipes, various upstream neighborhoods will be able to ‘take turns’ discharging water to downstream locations, thus reducing downstream flooding and sewer overflows.

The framework will be pilot tested at neighborhood-scale densities in Milwaukee, Ann Arbor and Toledo.

Customers envisioned for the computing framework are water utilities seeking to optimize the use of infrastructure assets to improve stormwater management decision-making. A smartphone application will also be developed for participating private homeowners to monitor the performance of sump pumps and rain barrels.

“Sump pump owners would be very excited to have a way to check on their smartphones to know if the pump is working, and how well it is working,” says Evan Pratt, P.E., the Washtenaw County Water Resources Commissioner and Director of Public Works.

Kerkez would like the project to be open-source, meaning that everyone would have access to the framework’s design. His doctoral student, Brandon Wong, adds, “We would like to generate a community around this sort of science.”

The project has a three-year timeline and several partners, including Michigan Aerospace Corporation (MAC), Project Innovations Inc. and the Water Environment Federation (WEF) in Washington, D.C. A prototype is expected to be complete by the end of 2015.
Faculty Honors

Adda Athanasopoulos-Zekkos
2015 ASCE Middlebrooks Award
Arthur Casagrande Professional Development Award

Aline Cotel
Willie Hobbs Moore Award

Avery Demond
Willie Hobbs Moore Award

John Everett
Thomas M. Sawyer, Jr. Teaching Award

Donald Grey
ASCE Ralph B. Peck Award

Ann Jeffers
Chi Epsilon Great Lakes District Excellence in Teaching Award
U-M CEE Excellence Award
Rolf H. Jensen Award by the Society of Fire Protection Engineers

Vineet Kamat
2014 Construction Research Congress Best Paper
2015 Outstanding VCEMP Alumnus
ASCE Huber Prize
Elected to the IAARC Board of Directors
ISARC Best Paper Award

SangHyun Lee
CETI Award for Outstanding Early Career Researcher
CII Distinguished Professor Award

Victor Li
Rackham Distinguished Graduate Mentor Award

Nancy Love
AEESP Foundation Distinguished Lecturer
Nominated to the 2014 IWA Fellows
Selected as AEESP Fellow
Jerry Lynch
2014 Construction Research Congress
Best Paper
George J. Huebner, Jr. Research Excellence Award

Jason McCormick
Neil Van Eenam Memorial Undergraduate Teaching Award

Carol Menassa
CII Distinguished Professor Award
Best Peer Reviewed Paper Award from the ASCE Journal of Management in Engineering

Jeremy Semrau
Arthur F. Thurnau Professorship

Seymour Spence
ASCE J. James R. Croes Medal

Krista Wigginton
Virginia Tech Charles E. Via, Jr. Department of Civil and Environmental Engineering Outstanding Young Alumni Award

Jim Wight
Charles S. Whitney Medal from the American Concrete Institute

Richard Woods
Richard S. Ladd Standards Development Award from ASTM International

Dimitrios Zekkos
ASCE 2014 Collingwood Prize
Imagine enjoying snacks and drinks at your favorite U-M sporting events and not creating any garbage afterwards. This might not be far in the future, as the U-M Student Sustainability Initiative (SSI) coordinates Zero Waste events throughout the University.

Zero Waste events divert as much waste as possible from landfills through the use of recycling and composting. The first Zero Waste U-M basketball game took place in 2010 and was considered a success. More than 450 pounds of waste generated at the game were either recycled or composted, while 137 pounds remained as trash.

Since then, SSI has brought Zero Waste to tailgates, dance marathons, gymnastics championships and dozens of student group events. Student groups can plan zero waste events by visiting sustainability.umich.edu/ssi and requesting free compostable products such as plates, bowls, forks, and more.

"Our main goal is to be the connecting force between student groups with a sustainability focus and the University to get their ideas rolling," Walker says.

CEE Sophomore Monica Walker is the north campus Zero Waste advisor on the SSI board. She says about twenty north campus student organizations have used compostable items from SSI, including ASCE and Chi Epsilon. Some organizations have started ordering it on their own, as the cost is comparable to regular products.

In addition to coordinating Zero Waste events, SSI works closely with the Office of Campus Sustainability to bridge the gap between student groups and the University administration.

"Our main goal is to be the connecting force between student groups with a sustainability focus and the University to get their ideas rolling," Walker says.

Walker joined SSI after CEE Alumna Olivia Marshall graduated and recommended Walker take her place at the board. It was a natural fit, as Walker had experience in helping organizations improve sustainability. During the summer of 2014, she served as an environmental engineering intern at General Motors in Lansing, MI. At GM, Walker developed a compost program within the automotive plant's cafeteria.

"I created many contacts in the field of composting, and helped develop a sustainable and cost-reducing program that reduced the plant's waste and saved money on waste disposal," Walker says.

For Walker, one of the great things about SSI is that a variety of majors are represented on the board so they have a large collective network. Together, they can figure out which student organizations have similar goals and bring those groups together for roundtables to see if they can collaborate.

To find out how you can get involved, please visit http://sustainability.umich.edu/ssi.
Talking Trash in Jakarta

THE TECHNOLOGY THAT your cell phone uses to find someone's face in a photo could be part of the key to understanding flooding in Jakarta, Indonesia.

The rivers of Jakarta are naturally susceptible to quick and severe flooding, and they also suffer from trash dumping. The garbage clogs canals and reservoirs, causing even more severe floods.

Alumnus Frank Sedlar (MSE EnvE '15) developed a system combining time lapse cameras and computer vision algorithms (similar to the ones used by cell phone cameras to detect faces) to better understand how the urban environment in Jakarta clashes with its powerful natural forces.

These algorithms detect contrast between different parts of an image, such as light-colored garbage against the dark water of the river. Cameras are placed both upstream and downstream of the river to capture images of garbage. Using the algorithm, Sedlar goes through the images and measures the difference between the amount of trash upstream and the amount downstream.

The idea is to find out which communities are responsible for the majority of the pollution. Once that community is identified, the next step is to place a dumpster there or organize regular waste management. If those steps are taken, researchers can expect to see a decrease in the amount of overall garbage downstream.

Sedlar recently received a Fulbright Grant to continue this research. He will work with PetaJakarta.org and the DKI Jakarta government to coordinate an urban drone research program. Sedlar is an alum of Associate Professor Valeriy Ivanov's research group.

To watch a video about Sedlar's work in Jakarta, please visit https://www.youtube.com/watch?v=MSN0NMpKp3A.
Graduate Students

Diana Bach
Towner Prize for Distinguished Academic Achievement

Paul Beata
J. Robert Beyster Computational Innovation Graduate Fellowship

Chen Feng
Rackham Predoctoral Fellowship

Mike Flanagan
ASCE 2014 Collingwood Prize

Julie Fogarty
Towner Prize for Outstanding Graduate Student Instructors
Dr. Teh-Hsun and Mang-Shuen Lee Award in Engineering and Science

Kevin Fries
NOAA Great Lakes Long-term Fellowship
Dow Sustainability Fellowship
NSF Graduate Research Fellowship

Wenyu Gu
Helen Wu Award

Mohammad Kabalan
ASCE 2014 Collingwood Prize

Alyssa Kody
NSF Graduate Research Fellowship

Nadine Kotlarz
EPA Star Fellowship

Andrea McFarland
NSF Graduate Research Fellowship

Sean Murphy
Dow Sustainability Fellowship

Raghav Reddy
U-M International Institute Individual Fellowship
Rackham International Student Fellowship

Christina Reynolds
Dow Sustainability Fellowship

Sarah Rimer
Michigan Institute for Computational Discovery and Engineering Fellowship
Rackham Predoctoral Fellowship
**Recent Grads**

**FALL 2014**
- PHD
  - Seungjun Ahn
  - Clinton Carlson
  - Lingji He
  - Zhichao Liu
  - Adam Lobbestael

**FALL 2014**
- MASTER'S
  - Shikhar Agarwal
  - Nkur Agomuoh
  - Mouhamed Akayssi
  - Kevin Auletto
  - Arnold Bayona Malo
  - Omar Bennouna
  - Bedant Bhutia
  - Tori Chang
  - Anton Dapic
  - Matthew Dunwoodie
  - Elizabeth Grobel
  - Justin Idali
d
  - Brianna Juhrend
  - Alexander Kemp
  - Harshil Khimesara
  - Nikhil Kulkarni
  - Sokli Liu
  - Rubilian Liu
  - Wenjia Liu
  - Perry Lyford-Stojic
  - Bharadwaj Mantha
  - Olivia Marshall
  - Jason Martinez
  - Nitin Mathur
  - Gina McGauley
  - Jack Miller
  - Aakash Mittal
  - C Powell
  - Andres Repetto
  - Jia Song
  - Daniel Tamarkin
  - Ross Woods
  - Jiayue Xue
  - Ronald Young
  - Boyuan Zhang
  - Ting Zhu

**WINTER 2015**
- MASTER'S
  - Diana Bach
  - Nigel Beaton
  - Hamza Bilal

**SUMMER 2015**
- Ho-Zhen Chen
  - Hyunwook Cho
  - Craig Collins
  - Gina Cortese
  - Vinay Damodaran
  - Robert Ellenberg
  - Gregory Ewing
  - Xunchang Fei
  - Clark Green
  - Samuel Gross
  - Jaeyong Im
  - Wei Jiang
  - Andrew Layman
  - Bingjie Li
  - Manuel Martinez
  - Amy Murdock
  - Rudy Nie
  - Hesleye Pline
  - Pedro Puente
  - Raghav Reddy
  - Margaret Reuter
  - Christina Reynolds
  - Frank Sedlar
  - Parisa Shahbazi
  - David Tuckey
  - Manuel Vega Loo
  - Xiaoxiang Wang
  - Yingqing Wang
  - Jade Warner
  - Eric Weinberg
  - Kyle Welch
  - Donghui Xu
  - Chenju Yang
  - Zhuxin Yao
  - Hui Zhang
  - Ziwei Zhong
  - Yicong Zhu

**FALL 2015**
- Colin Sullivan
  - Alex Willets
  - Manu Akula
  - Sarah Haig

**Undergraduate Students**

- Samayyah Williams
  - Tian Xia
  - Yilan Zhang

- Rackham Summer Award
  - Antenore C. Butch Davanzo Scholarship

- American Society for Heating, Refrigerating, and Air-Conditioning Engineers Fellowship

- Scholarship Fellowship

- Undergraduate Students

- Distinguished Achievement Undergraduate Award

- Research Fellows

- Microbiology of the Built Environment Postdoctoral Fellowship
American Society of Civil Engineers (ASCE)
By Bridgette Ronnisch, President

THE UNIVERSITY OF Michigan’s student chapter of ASCE has two primary objectives: to unite the community of civil and environmental engineers and to connect students with a variety of professionals in the field. This year has been an incredibly successful year. We have had several social events, including a kick-off barbecue, ice cream social, and pumpkin carving, which were all well attended by the department. ASCE also worked closely with the surrounding community, both by donating over 2,000 lbs. to Food Gatherers through the CEE annual food drive, and by our trip to Ypsilanti to work on a house with Habitat for Humanity.

Throughout the school year, we hosted about two speaker meetings a month. The speakers this year discussed a wide variety of topics - connected vehicles and infrastructure, the history of Detroit’s buildings and bridges, naval robotics, Michigan’s first diverging interchange, and career opportunities. We also hosted the ASCE Career Fair in November, which attracted 32 companies and over 100 students. More recently, we organized a weekend trip in February to Chicago to visit with alumni and tour ongoing construction projects in the city.

ASCE is an organization that is open to all who are interested. Students are not required to be a member to benefit from the variety of opportunities we offer. For any questions about events or involvement, please contact us at asce-officers@umich.edu.

Bridges to Prosperity (B2P)
By Jordan Easter, President

BRIDGES TO PROSPERITY at U-M is a student-led engineering organization dedicated to the design and construction management of pedestrian footbridges in rural Bolivia.

Within Bolivia there are many impoverished rural communities that become isolated during the rainy season, with limited access to markets, schools and medical supplies due to impassable rivers. By constructing the bridges in cooperation with rural villagers, community members are provided with safe and consistent access to necessary services and opportunities. The U-M B2P chapter is composed of undergraduate and graduate students; though CEE students make up a majority of the team, there are students from several departments.

A travel team from U-M B2P will leave Ann Arbor in August 2015 to spend a month in Chullina, Bolivia as they assist with the construction on-site. In addition to design, construction management and travel preparation, the group has worked diligently throughout the year to raise the $12,000 dollars necessary to build the 90 meter span footbridge.

The organization plans to continue the annual projects for many years in conjunction with the parent organization. With three projects providing the group with a credible history and a strong partnership to our parent organization, this student chapter is expected to grow as more rural communities learn of this program. To learn more about our projects or to make a donation to the chapter please visit http://umich.edu/~umbridge/. If you are interested in joining, please email B2P-officers@umich.edu for more information.
Chi Epsilon
By: Rachel Thompson, President

CHI EPSILON HAD a successful 2014-2015 school year. The U-M chapter initiated one graduate student in the fall 2014 semester, Zhijie Wang. During the Winter 2015 semester, they initiated one graduate student, Juhyeong Ryu, and two undergraduate students Bingyuan Hu and Arianne Ostolaza. Professors Valeriy Ivanov and Branko Kerkez also initiated as faculty members this year. After initiation both semesters, new initiates, current Chi Epsilon members, and CEE faculty attended Chi Epsilon’s initiation banquet to celebrate new initiates accomplishments.

Chi Epsilon held their bi-weekly speaker series during both the winter and fall semesters with three professional speakers each semester from various departments of the University to discuss their research with the group. For Chi Epsilon’s service event this year, they participated in the invasive species removal on North Campus. Social events for the year included bowling and whirlyball.

Michigan Concrete Canoe Team (MCCT)
By Mehul Kulkarni, Team Member

ONE OF THE most common questions that the Michigan Concrete Canoe Team is asked is, “Does it actually float?” The answer of course, is yes! MCCT is a unique engineering design team that integrates the engineering process with aesthetic appeal and athletic performance in order to create a top notch product for our annual competition. The team got off to an excellent start this year with successful recruiting events that brought in one of the largest freshman classes to date. The beginning of the semester was a busy time. Our mix design team met weekly to test different concrete mixes and determine which one had the ideal balance of density and strength for use in our canoe. Our hull design team also met weekly to determine the ideal shape of our canoe. We ultimately decided on a new hull shape that would allow the canoe to turn easier in the water, as that was an issue last year.

Simultaneously occurring during this time was work on selecting a theme for the year. We had many ideas, but ultimately we decided on a musical theme, “Maize and Blues.” Thus we named our canoe, ALLEGRO, a musical term meaning “at a brisk speed”. In early December we placed the concrete inside of a female mold and allowed the concrete to cure over the holiday break. During the winter semester we continued work on our canoe by sanding it and staining it. Also occurring during the winter semester were our paddle practices. Because racing is a crucial part of our competition, we spent our Friday nights in the NCRB pool practicing our turns and training to be in the best shape we could be.

Thanks to the collaborative efforts of the entire team, as well as strong leadership and technical knowledge from older members, MCCT placed second overall at the regional competition, which is the highest place we have earned yet! We placed in the top four in three categories: oral presentation, technical paper, and final product.

Anyone is welcome to join MCCT; it’s as easy as coming to one of our meetings and helping out in the Wilson Center. Although we are technically a civil engineering team, anyone of any major is more than welcome to join. If you are interested and would like more information about our team, please contact captain.umconcretecanoe@gmail.com.
Earthquake Engineering Research Institute (EERI)
By Jonathan Hubler, President

THE EERI STUDENT Chapter is dedicated to promoting research in fields related to earthquake engineering through events within the CEE department and outreach to the local community.

In the summer of 2014, the EERI student chapter organized an undergraduate student design team to participate in the EERI Undergraduate Seismic Design Competition at the 10th National Conference on Earthquake Engineering in Anchorage, AK. The team was the first from U-M to participate in the competition, and placed 12th nationally. Following up on the strong finish in the competition, the EERI student chapter participated in the Undergraduate Seismic Design Competition at the 2015 EERI Annual Meeting in Boston.

EERI members also participated in community outreach programs with Professor Jason McCormick at a local elementary school to promote engineering to second-grade students. The members taught second-grade students about bridges and allowed them to experiment with a computer program to build and test their own bridges. The group also hosted similar bridge activities for 5th-8th graders during the College's Xplore Engineering Day, and during a visit from the Ovid-Elsie Women's Science Society.

The EERI and the NeWinCEE student chapters co-hosted a guest speaker during the winter term. Dr. Annie Kammerer presented on the "Seismic Design and Re-evaluation of Nuclear Power Plants: Past, Present and Future." The EERI chapter also hosted a meet and greet with Dr. Kammerer, who shared her unique career experiences and provided useful career advice with students. Next year, the officers hope to bring a speaker from EERI's Friedman Family Visiting Professionals Program.

Any student is welcome to join EERI and learn about groundbreaking research in the field of earthquake engineering. Registration information can be found on EERI's website (https://www.eeri.org/member-center/get-involved/become-a-member/). Yearly student memberships start at $25. Any additional questions on registration or how to get involved with the EERI student chapter can be directed to the EERI officers (eeri-officers@umich.edu).

Geo-Institute (G-I) Student Organization
By Athena Grizi, President

THE GEO-INSTITUTE (G-I) Graduate Student Organization at U-M, now in its fifth year, continues to successfully promote the geotechnical engineering field. This past year we had new exciting events.

Our organization was selected to host the Cross-USA Lecturer, Prof. Ken Stokoe. The Cross-USA Lecture is one of the four honor lectures given by our national chapter. It was great to have Prof. Stokoe, a U-M alumnus, visit our department and share his knowledge with us.

For the first time, our U-M team was selected to participate to the National GeoWall competition in San Antonio, TX. The team consisted of two undergraduate and two graduate students and the requirements of the competition included the design, written proposal and construction at the finals of a mechanically stabilized earth (MSE) retaining wall using paper reinforcement. The students had a lot of fun, and also had the chance to attend a professional engineering conference and interact with other students, professors and practitioners. Students interested in participating in next year's competition should contact G-I for more information.

Any graduate student interested in geotechnical engineering is welcome to join (registration is free) and learn about our activities. Any questions on how to get involved with the G-I student organization can be directed to the G-I officers (gi-officers@umich.edu).
Network for Excellence of Women in CEE (NeWinCEE)
By Hannah Wasserman, Outreach Chair

NEWINGEE AIMS TO provide outreach for women in both undergraduate and graduate programs in CEE. We help provide mentorship opportunities, academic guidance, and networking opportunities with industry professionals while promoting leadership among women in the Civil and Environmental Engineering fields. Our events include lecture series, networking lunches, mock interview and resume critique workshops, and undergraduate-graduate mentoring workshops.

During the 2014-2015 school year, we held a resume and interview workshop before the Career Fair and also hosted Dr. Annie Kammerer in our Meet-a-Civil-Engineer-Leader seminar! Dr. Kammerer gave a technical presentation on Seismic Design and Re-evaluation of Nuclear Plants: Past, Present and Future. She also met with students to discuss her experiences in the industry. This summer, NeWinCEE is supporting several CEE undergraduate students who will be working on summer research projects.

If you are interested in hearing more about NeWinCEE or want to become involved, please contact Prof. Adda Athanasopoulos-Zekkos at addazekk@umich.edu!

Graduate Environmental Engineering Network of Professionals, Educators and Students (GrEENPEAS)
By Jeseth Delgado Vela, President

THIS PAST YEAR, GrEENPEAS hosted several activities to promote a sense of community in the Environmental and Water Resources Engineering Program (EWRE). These activities included Free Bagel Fridays, happy hours, journal clubs, a holiday party and an end of the year party for EWRE faculty, students and staff.

If you would like to become a GrEENPEAS officer or help GrEENPEAS to support events, please contact the GrEENPEAS incoming President, Zhong Qiao, at zhqiao@umich.edu.

Represent CEE wherever you go with a CEE polo shirt!

The shirts are available in both Maize and Blue and come in Women’s and Men’s sizes, all are $25. Sizes and colors are limited. Please contact Allison Lyons at (734) 764-5235, or e-mail adlyons@umich.edu to place an order! Shipping & Handling is $5.
Steel Bridge Team
By Saya Kajiwara, Co-Captain

2014-15 was a season of growth and innovation for the Steel Bridge Team. This year's rules were released towards the end of August, and proved to be very challenging. These rules dictated the dimensions of the bridge, and specified material, structural, and construction requirements. We went through hundreds of design iterations in RISA-3D, striving to find a good balance between structural efficiency, constructability, and ease of fabrication. Upon narrowing down our designs based on criteria such as the number of unique pieces, types of connections, and total linear feet of steel, we settled on an over-truss design, which we believed would maximize the stiffness while minimizing the weight and deflection.

Once our design was modeled in Solidworks CAD, we wasted no time jumping into the fabrication work. The team spent hundreds of hours in the Wilson Student Team Project Center cutting, milling, and welding components of the bridge, and even had the opportunity to use the lathe, CNC mill, and HAAS. This year, jigs were designed, fabricated, and implemented to minimize fabrication errors. Additionally, we had the exciting opportunity to work with Troy Laser & Fab, who generously donated their services and laser cut some of the larger steel tube. Several members stayed and worked on fabrication during spring break, and by mid-March, we were ready for load testing.

After several weeks of late nights spent testing and modifying portions of our bridge, we were off to the regional conference in early April, hosted by the University of Toledo, where we competed against other schools in our region. With friends and family there to support us, our construction team had an outstanding run and our bridge passed all tests. We are proud to have placed first in aesthetics, construction speed, and construction economy. However, due to setbacks from incurred penalties, we placed third overall.

Altogether, the 2014-15 season was exciting and a great learning experience for the team. If you are interested in our team and would like more information, please contact the Steel Bridge Team co-captains at sbtcaptains@umich.edu.

Awards Announced at ASCE-CEEFA Banquet

In April 2015, ASCE and CEEFA held a banquet honoring students, faculty and staff for their service to the department over the past year.

At the event, awards were given from ASCE to the Professor of the Year, Jason McCormick; Staff Member of the Year, Matt Blank; and GSI (Graduate Student Instructor) of the Year, M. Chase Dwelle.

CEEFA announced the recipient of the CEEFA Faculty Award, which was presented to Associate Professor SangHyun Lee.

Photos (from left to right): CEEFA President Jim Jacobi and Associate Professor SangHyun Lee, ASCE President Bridgette Ronnisch and Associate Professor Jason McCormick, Ronnisch and Matt Blank, Ronnisch and M. Chase Dwelle.
CEEFA Tailgate

THE 31ST ANNUAL CEEFA Tailgate was held on October 11, 2014. CEEFA was proud to carry on this tradition of bringing the whole community – students, alumni, faculty, staff and retirees – together to celebrate the U-M spirit.

The celebration included engaging activities for all ages, including face painting, a football toss and a drawing for prizes.

Don’t miss the next CEEFA Tailgate and Football Game on Saturday, September 26 before the Michigan vs Brigham Young University game! To order football tickets with the CEE group, please visit www.mgoblue.com/tickets by August 28 and click on Promotion Codes in the blue bar at the top of the page. Please enter code CEE2015.

Tailgate tickets may be purchased at cee.umich.edu.

Student Awards Ceremony and Alumni Reception

IN OCTOBER 2014 the CEE department hosted the 7th Annual Student Awards Ceremony and Alumni Reception. CEE honored fellowship recipients and graduate students who received significant external awards. Additionally, CEE’s 2014 Alumni Society Merit Award recipient, Dr. John Crittenden (PhD Env Eng ’76), was recognized. Crittenden is the director of the Brook Byers Institute for Sustainable Systems at Georgia Tech, and he serves as the Hightower Chair and Georgia Research Alliance Eminent Scholar in Environmental Technologies. The 2015 Student Awards Ceremony and Alumni Reception will take place on Friday, October 9.
DEAR CEE ALUMNI, STUDENTS AND FRIENDS:

As the incoming CEEFA President, let me start out by saying that I am both honored and humbled to serve in this role. I want to take this opportunity to thank our outgoing President, John Hiltz, for the terrific work he did during his time on the Board of Directors. His leadership and enthusiasm in the role have helped to energize all of us in supporting CEE in these very exciting times.

Our current CEEFA Board is filled with outstanding people and the board continues to grow. In the past year we have gained four new members: John Crittenden, Stephen Guidos, Tara Jackson and Ken Loh. All of us are ready and willing to support CEE in achieving its goals. This past year, CEEFA has focused on several initiatives related to recruiting, alumni connections, student development and fundraising. Just to mention a few examples, we launched the CEE Network which provides an interactive map of active alumni, the UMCEEEFA YouTube channel which provides alumni with the opportunity to post informal videos updating us on their current status and activities, and we are developing a program designed to extend our outreach to alumni in key cities outside the Michigan area. We are currently planning to host a get-together for alumni in the Houston area in the early fall. Those who attend will have an opportunity to hear updates from the CEE Chair, learn more about current CEE statistics, plans and initiatives, and hear from a faculty member on an innovative new program. Of course, the opportunity to network with fellow alumni will be a terrific benefit as well. Moving forward, we will be considering other areas of the country with large concentrations of CEE alumni for these types of events.

We all find it challenging to keep up with our professional and personal commitments. I know that time is a precious resource and we all tend to guard it carefully. Having said that, I also know through personal experience that taking the time to reach out and reconnect with those sharing a common bond can be both a learning and an entertaining experience. That has been my experience with CEEFA. Our department is one of the best in the country, if not the world, and consistently maintains its high rankings and exceptional faculty. Whenever and wherever I run into a Michigan alum, be it from the College of Engineering or elsewhere, it is always fun to share a memory and our mutual pride in this great University. I encourage you to take the opportunity to reconnect, and please consider leveraging CEEFA to that end.

The CEEFA Board is always looking for input from students and alumni on ways to better support the department. Please feel free to contact me, or any member of the board, with comments or questions and be sure to check out the department’s website. Under the alumni tab, you will find announcements, videos and the opportunity to sign up for the CEE Network!

We will have our annual tailgate the weekend of the BYU game this year, September 26 to be exact. Needless to say expectations are running high. We hope to see you there, GO BLUE!

Jim Jacobi, P.E.
Senior Principal
Chief Information Officer
WALTER P MOORE
jjacobi@walterpmoore.com
Carlos F. Daganzo

PROFESSOR CARLOS F. DAGANZO (PhD '75), one of the world’s most well-known transportation scientists, earned his PhD under Professor Donald Cleveland.

“I was touched by the confidence that my advisor and mentor Don Cleveland, had in me,” Daganzo says. “He allowed me to choose to research the topics I wanted, to use self-study rather than coursework to speed up my progress, and even to teach a graduate level course. All this helped develop my independence and later flourish as an academic. I have tried to do the same with my own PhD students.”

Today, Daganzo is a Chancellor’s Professor of the graduate school in civil and environmental engineering at the University of California, Berkeley. In 2014 he was elected to the National Academy of Engineering. Noted for his contributions to econometrics, logistics, freight operations, network theory, traffic flow, and transit operations, Daganzo has also sole-authored four research books.

Recently his work has focused on public transportation systems. About ten years ago, after working in the area of logistics (big picture freight transportation) for a long time, Daganzo became interested in understanding the big picture of people transportation at the city scale.

“I felt this was important because the world was and is rapidly urbanizing, and transportation systems can help shape how cities become,” Daganzo says. “I also saw that the methods and ideas my students, collaborators and I had developed for organizing the movement of freight on a large scale could be applied to understand how best to organize the movement of people in cities. I started to do this considering all modes of transportation (individual and collective in their existing and emerging forms) and quickly learned that collective transportation should be the dominant mode in the largest and densest cities. For this reason, it became a focus of my efforts.”

Currently, the U-M CEE department is working to bring transportation studies back to the department, as the program ended with the retirement of Professor Cleveland in 1988.

Daganzo explains the importance of transportation: “It underpins the world’s commerce; it is the reason why cities are the way they are; and is a major contributor to the greenhouse effect.”

In addition, Daganzo adds, “the field of transportation is young and in the process of being developed. Whereas other more mature fields in CEE build on fundamental ideas hundreds of years old, the fundamental ideas of transportation science are still being developed. This should be exciting to inquisitive minds. For these reasons, I believe transportation should be an area of emphasis at top engineering schools everywhere.”

Daganzo’s advice for current students is: “I have always tried to look at real world problems without allowing the problem solving tools I’m most comfortable with shape my understanding of the issues. I believe that a good understanding of the issues and a good, unfiltered understanding of how things actually work are the basis for the inspiration that leads to path-breaking ideas.”

Daganzo’s favorite memories from his time at U-M include “sledding at the hill right out the door on crisp winter weekends and, of course, football at the stadium on many fall Saturdays.”