Structural Engineering is pleased to announce the addition of four new faculty to its roster, effective July 1, 2008. Areas of expertise include computational and applied mechanics, solid mechanics, materials science, visualization technologies and forensics, and earthquake engineering, to name a few...

Yuri Bazilevs, Assistant Professor, joins UC San Diego from the University of Texas at Austin, where he served as Lecturer in the Department of Aerospace Engineering and Engineering Mechanics, following graduate school there. Dr. Bazilevs’ expertise is in computational mechanics, isogeometric analysis (integration of design and analysis), fluid-structure interaction, vascular blood flow, biomechanics, turbulence modeling and computation, and mathematics of finite elements and isogeometric analysis.

David J. Benson, Professor, comes from UC San Diego’s Department of Mechanical and Aeronautical Engineering, where he served as faculty since 1997. Dr. Benson’s expertise is in computational mechanics, solid mechanics and materials science. Benson co-authored with Dr. John Hallquist on a finite element code, Dyna3d, which Livermore Software Technology later commercialized into LS-DYNA, a code used by nearly all car companies in automobile crash worthiness calculations. Additionally, Dr. Benson has collaborated with Bazilevs on research since 2007.

Maurizio Seracini, Adjunct Professor, comes to us from the Center of Interdisciplinary Science for Art, Architecture, and Archaeology (CISA3; UC San Diego Division, Calit2), where he serves as Director. Currently, Dr. Seracini collaborates with SE’s own Professor Falko Kuester, as part of an 18-month project to re-discover a long-lost Leonardo da Vinci mural, the “Battle of Anghiari” in Florence, Italy’s famed Palazzo Vecchio. Dr. Seracini specializes in forensics, and received his B.S. from UC San Diego (Class of 1973).

Yael (Lelli) Van Den Einde, Lecturer (LPSOE), returns to the Department of Structural Engineering after serving as Assistant Director and Co-Principal Investigator of NEESit Cyberinfrastructure Center, which serves the Network for Earthquake Engineering Simulation (NEES) program. Van Den Einde specializes in earthquake engineering data, metadata development and management, performance-based earthquake engineering, and the development of educational programs. Dr. Van Den Einde is a graduate (M.S./Ph.D.) of our program.
Greetings...

I’m pleased to report that we are moving forward in breaking ground for our new building. The buildings currently occupying the location for the new Structural and Material Engineering building were recently disassembled. A ground breaking ceremony will be held Friday, October 24, 2008, and with the new construction commencing in November, 2008. The new building promises to be visually impressive, yet sensitive to environmental and sustainability concerns.

Additionally, we continue to move forward with adding new faculty to our department, increasing the diversity and breadth of our program. This is a time of unprecedented growth in our department.

And as we enter a new era, with a new President of the University of California, we look forward to the new directions in which President Yudof will be leading us.

Looking ahead,

Gilbert Hegemier
Professor & Chair
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M.S. and Ph.D. Graduates

Fall 2007 -
Sanket Anturkar, M.S., Professor Uang, advisor.
Michele Barbato, Ph.D., “Finite Element Response Sensitivity, Probabilistic Response and Reliability Analyses of Structural Systems with Applications to Earthquake Engineering,” Professor Conte, advisor.
Ivan Bartoli, Ph.D., “Structural Health Monitoring by Ultrasonic Guided Waves,” Professor Lanza di Scalea, advisor.
Alvaro Celestino, M.S., Professor Luco, advisor.
Stefano Coccia, Ph.D., “Ultrasonic Guided Waves for Structural Health Monitoring and Application to Rail Inspection Prototype for the Federal Railroad Administration,” Professor Lanza di Scalea, advisor.
Matt Comber, M.S., Professor Hegemier, advisor.
James Dieckman, M.S., Professor Kosmatka, advisor.
Jacob Finkler, M.S., “Transmission, Reflection and Diffraction Measurements of Ultrasonic Guided Waves for the Structural Monitoring of Composite Aircraft Wings via Composition for Coupled Rotating Rigid Bodies,” Professor Lanza di Scalea, advisor.
Quan Gu, Ph.D., “Sensitivity and Reliability Analysis of Soil-Foundation-Structure-Interaction (SRSI) Systems,” Professor Conte, advisor.
Xianfei He, Ph.D., “Vibration-Based Damage Identification and Health Monitoring of Civil Structures,” Professor Conte, advisor.
Zhu Mao, M.S., Professor Todd, advisor.
Babak Moaveni, Ph.D., “System and Damage Identification of Civil Structures,” Professor Conte, advisor.
Scott Newell, M.S., Professor Uang, advisor.
Ian Prowell, M.S., Professor Elgamal, advisor.
Mark J. Velezcos, Ph.D., “Precast Balanced Cantilever Segmental Bridge Superstructures with Bonded Tendons,” Professor Restrepo, advisor.

Winter 2008 -
Griffin Brungraber, M.S., Professor Karbhari, advisor.
Eduardo Velazquez, M.S., Professor Kosmatka, advisor.

Spring 2008 -
Jared Bell, M.S., “Seismic Testing of Existing Full-Scale Pile-to-Deck Connection; Precast Prestressed and Steel Pile,” Professor Restrepo, advisor.
Chad Raymond Closs, M.S., Professor Uang, advisor.
Paul Greco, M.S., Professor Todd, advisor.
Eric Kjolsing, M.S., Professor Karbhari, advisor.
Tomohiro Kobayashi, M.S., Professor Hegemier, advisor.
Rui Koriwata, M.S., Professor Uang, advisor.
Bryan Lin, M.S., Professor Uang, advisor.
Kevin Lin, M.S., Professor Uang, advisor.
Jeffrey MacMaster, M.S., Professor Uang, advisor.
James Newell, Ph.D., “Cyclic Behavior and Design of Steel Columns Subjected to Large Drift,” Professor Uang, advisor.
Christopher Sebilia, M.S., Professor Conte, advisor.
Patrick Carlo Wilcox, M.S., “Reliability Based Assessment of FRP Rehabilitation of Reinforced Concrete Girders,” Professor Karbhari, advisor.
Janet Wolfson, Ph.D., “Blast Damage Mitigation of Cellular Steel Structures from Near-Contact Charges,” Professor Hegemier, advisor.

Photos not available of all graduates.

Department of Structural Engineering - Chair/Editor-in-Chief: Gil Hegemier • Vice-Chairs: P. Benson Shing and Michael D. Todd • Business Officer: Jacqueline Vo • Editor/Layout: Melanie R. Ruth • Staff Photographer: Daryl Rysdyk • Contributing Writers/Photographers: Rex Graham, Daniel Kane, Andrea Siedsma. To submit news stories, please visit http://structures.ucsd.edu, and click on “Submit News” in the News section.
Boeing 787’s Landing Gear To Be Tested At Powell Labs

This fall and winter, SE will be conducting the Federal Aviation Administration (FAA) certification testing of landing gear components for the new Boeing 787 aircraft. These components are made by Messier-Dowty using advanced composite materials. The parts will be subjected to loads exceeding 1 million pounds using our unique Seismic Response Modification Device (SRMD) test facility. SE professor Hyonny Kim is the Principal Investigator of the project, and Dr. Gianmario Benzioni, SE Research Scientist and SRMD Project Manager, is Co-Principal Investigator.

SE Researchers Work with Navy On New DDG 1000 Destroyer

SE faculty Robert Asaro, Gil Hegemier and Hyonny Kim are currently working with the Office of Navy Research on concept designs of the new DDX deckhouse-steel connections, related to the U.S. Navy’s newest class of destroyers, the DDG 1000.

Hybrid joints are subject to complex internal stress states and are critical in terms of how they transfer loads between the massive steel hull structures and the lower density fiber reinforced polymer (FRP) composite deckhouse structure, and SE’s researchers have impressive experience in this area.

In addition to the study of joints, another team is evaluating blast damage vulnerability of the deckhouse structure.

The Navy has plans for the production of three DDG 1000’s.

Working To Help U.S. Military Thwart Explosive Threats

Under a grant funded by the U.S. Department of Homeland Security through the National Science Foundation, Professor Francesco Lanza di Scalea is working with the U.S. military on an imagery-based surveillance technique which uses visible and infrared images, analyzed by statistical pattern recognition algorithms to detect and classify suspicious objects such as camouflaged bombs placed at roadside and in airports. The goal is to advance fundamental knowledge in new technologies for sensors and sensor networks, particularly in relation to the prediction and detection of explosives and related threats. “What we hope to do is use image processing and monitor different wavelengths of an object to detect a certain shape of an outside container, and to also determine whether it is empty, or if it has some metal inside,” Lanza di Scalea said. “We are focusing on trying to detect or identify improvised explosive device (IED) camouflages such as cardboard boxes and cigarette cartons found in Iraq and Afghanistan.” The most common IED camouflages in Iraq include shoe boxes, milk cartons, cigarette cartons, plastic bags and garbage cans.

Research Expo 2008 Winners

Best Poster (SE) “Evaluation of Prefabrication FRP Structural Formwork Bridge Deck Systems” by Anna Beth Pridmore; Professor Karbhari, Advisor.

Honorable Mention (SE) “Accelerating Bridge Construction in Earthquake Country” by Matthew Tobolski; Professor Restrepo, Advisor.

Best Use of Literature in Poster (SE) “Long-Term Integrity of Epoxy-Bonded Rebar Couplers” by Griffin Brungraber; Professor Karbhari, Advisor.

Visit http://structures.ucsd.com to view all of SE’s 2008 Research Expo posters
How To Shake 1 Million Pounds of Concrete

Earlier this summer, SE researchers subjected a three-story structure (which resembled a parking garage) to a sequence of earthquake shake test jolts as powerful as magnitude 8.0, as part of a series of seismic tests to help improve building codes across the nation. The type of precast concrete floor system tested is similar to those used in parking garages, college dormitories, hotels, stadiums, prisons, and increasingly, office buildings. The goal of the project was to be able to design a building that can withstand a major earthquake.

In the past, due in part to lack of industry knowledge, individual precast elements pulled apart. Additionally, the seismic code for these types of precast buildings is 20 years old. The Precast/Prestressed Concrete Institute recently launched a competition to design better floors for such buildings. “There are significant construction advantages in assembling concrete structures from pieces that are built ahead of time, but the challenge in using precast concrete is that the structure is not one continuous piece of concrete, but many individual ones that are connected together,” said Robert Fleischman, a civil engineering professor at the University of Arizona and principal investigator of this research project. Added Jose Restrepo, co-principal investigator for the shake test and SE professor, “The floor section edges are interconnected and they sit on ledges; you can see these in any parking garage. These connections have had problems in earthquakes.” Added Gilbert A. Hegemier, director of Powell Structural Research Laboratories, and SE professor and chair, “This is a landmark test that will enable a very fast and economically advantageous high technology construction method to be used in seismically active regions of the United States.”

The seismic tests of the one-half-scale structure involved a collaboration among UC San Diego, the University of Arizona, and Lehigh University. The $2.3 million project was funded by the Precast/Prestressed Concrete Institute and its member companies and organizations, the National Science Foundation, the Charles Pankow Foundation, and the Network for Earthquake Engineering Simulation (NEES). The 1 million-pound precast concrete structure has the largest footprint of any structure ever tested on a shake table in the United States.

Hemp Walls... A Renewable Resource

Dr. Gillian Cutter, a recent SE graduate student, is sowing the seeds for a greener construction industry—with hemp. Using the long fibers from the bark of hemp plants, and plant-based resins, Cutter has produced strong, durable construction boards that are biodegradable and almost completely free of fossil fuels. Hemp grows quickly in a wide range of conditions, which makes it a popular renewable plant fiber for environmentally friendly bags, socks and other textiles. Contrary to previous findings, Cutter’s research—funded by UC San Diego and The San Diego Foundation—suggests that aligned hemp fibers and plant-based resins can be pressed and heated to make high performance construction materials. Technically called “biocomposites,” these are strong enough to be used as door and window frames, roof panels, decking and wallboards. Such biodegradable materials could replace many wood, metal and fiberglass products currently used in the construction industry.
Student Chapter Places High in Steel Bridge Competition At Regional Conference

UC San Diego’s student chapter, The Society of Civil and Structural Engineers (SCSE), recently traveled to Cal State Northridge for ASCE’s annual Regional Student Conference. Several hundred students from eighteen chapters competed in several events in the North Los Angeles area. SCSE’s bridge team designed a Warren Truss for this year’s competition which allowed for easy fabrication and construction. Designing of the 21-foot-long bridge, which started in September, 2007, and took 1000 + hours to fabricate, was one of the first bridges with fabrication done solely by students on the team. SCSE’s results included: Steel Bridge Competition 1st place – Construction Speed and Economy and 2nd place overall.

Congratulations to everyone in SCSE who helped make these competitions a success! The chapter wishes to thank: Professor Todd (Chapter Advisor), Professor Uang, UCSD’s Research Machine Shop Staff, Craig Hobson, Jeremy Niez (Steel Bridge captain) for his outstanding leadership, all members of the UCSD-SCSE Steel Bridge team, Taryn Dunbar (Concrete Canoe Captain), Bethany Atchison (VP of Conference), Oliver Asis (Acting VP of Conference), and of course, to Jennifer Heredia (Chapter President).

Sixth Graders Rock Buildings During Outreach Event

The 2nd Annual Seismic Outreach, hosted by SE’s Society of Civil and Structural Engineers (SCSE) Chapter, took place May 5-13, 2008 on the UC San Diego campus. This year’s event involved more than 500 sixth grade students from the Del Mar School District, over 75,000 K’Nex™ pieces, and countless hours of planning and preparation by Jessica Green and Colin Haynes, with other student volunteers.

The goal of this outreach is to introduce the concepts of science, math, leadership, and engineering to the next generation of engineers. The project requires sixth grade students to design and build a building in Downtown San Diego to withstand a high magnitude earthquake. Each team of four students took on roles of owner, architect, engineer, and contractor and developed floor plans, construction drawings, a budget, and created an architectural rendering of the building. After the students finished their structures at their local schools, they came on campus to have each structure tested on a portable shake table and then participate in “job interviews” related to their assigned role.

SE Team Takes First Place At National Competition

A team of six SE undergraduate students won first place in the Fifth Annual Seismic Design Competition, held in New Orleans in February. The winning structure, a balsa wood tower, was constructed to withstand simulations of three significant 20th-century earthquakes. The tower is on permanent display at the entrance to the Science and Engineering Library, along with the team’s poster.

Jacobs School Places High In National Rankings

UC San Diego’s Jacobs School of Engineering was ranked 11th among the nation’s 191 engineering schools, up from 13th place last year. The Department of Structural Engineering, ranked 16th in the specialty of “civil engineering.”
Faculty Announcements
Adjunct Professor Robert Englekirk recently published a book, “Appreciating Italy,” which details Englekirk’s experience in this popular travel destination (available from the UC San Diego bookstore). Professor and Vice-Chair Vistasp M. Karbhari accepted a position at the University of Alabama in Huntsville as Provost and Executive Vice-President for Academic Affairs, beginning September, 2008. Karbhari has been at UC San Diego since 1995 and served as SE Department Chair (2002-2003) and as Vice-Chair (2007-2008). Our best wishes and appreciation to Professor Karbhari for his many years of faithful service to this institution.

Faculty and Student Awards
Professor and Vice Chair P. Benson Shing and graduate student Andreas Stavridis were recently awarded the “Most Effective Outreach and Training Activity of 2008” at the NEES Annual Meeting in Portland, Oregon. They were selected for most effectively integrating NEES into the California State Summer School for Mathematics and Science (COSMOS) program. Senior Jennifer Heredia-Garcia was selected as the recipient for the 2008 Structural Engineering Department Award for Excellence in Leadership and Service, by the Triton Engineering Student Council. Anna Pridmore, an SE graduate student researcher, was the recent recipient of four significant awards: 1) The National Science Foundation Graduate Research Fellowship (Honorable Mention; 2) The American Women in Science and Engineering (AWIS) Local Chapter Scholarship; 3) The Paulette Duve Memorial Scholarship, from the Women’s Transportation Seminar; and 4) Best Poster-Structural Engineering at Jacobs School of Engineering’s 2008 Research Expo. Jennifer Rhymer, graduate student, was recently selected as the winner of the 2008 AIAA Foundation Award/William T. Piper, Sr. General Aviation Systems Graduate Award. Senior Brandon Tappen was named as the 2008 Salutatorian Senior and Andy Tran was announced as SE’s 2008 Valedictorian at this year’s Senior Reception. Additionally, Tran was recently awarded the Structural Engineers Association of San Diego Scholarship for the 2007-2008 academic year. Congratulations to all of our outstanding faculty and students!

Staff News
Jennifer Bourgeois joined SE as a Fund Manager. Jennifer came from California Sea Grant. Paul Greco (SE, Class of 2008) is now working as Assistant Engineer in the Powell Labs. Lindsay Walton comes to Structural Engineering as Faculty Assistant in the SERF building. Sonya Wilson was added formally to our staff as Faculty Assistant in UC-409. Congratulations and a warm welcome to our newest staff members!

SE Family News
Congratulations to Sharon (Gunderson) Harvey (Undergraduate Student Advisor) and Luke Harvey, who were wed on Saturday, September 20, 2008, in Carlsbad, California.

Professor Francesco Lanza di Scalea and his wife, Faye, announce the birth of daughter, Maria (photo not available), who was born this spring. A baby daughter, Totini, was born to grad student Prishati Raychaudhuri and husband, Samit, on February 21, 2008. Totini weighed 7 lbs., 5 oz., and was 21 inches long. Congratulations to all of our new parents on their additions!
2007 David Klein
M.S. STRUCTURAL ENGINEERING
Klein recently started working as a Mechanical Engineer in the Structural Design group at General Atomics. David and wife, Kate, are expecting the birth of their first child, a son, this October.

2007 Babak Moaveni
PH.D. STRUCTURAL ENGINEERING
Moaveni was recently appointed Assistant Professor for the Department of Civil and Environmental Engineering at Tufts University, in the Boston area.

2005 Azadeh Bozorgzadeh
PH.D. STRUCTURAL ENGINEERING
Bozorgzadeh recently went to work for Moffatt & Nichol (maritime infrastructure) in Walnut Creek.

2001 Richard (Wei-Chih) Chen
M.S./B.S. (2000) STRUCTURAL ENGINEERING
Chen has worked as a licensed S.E. at Englekerk Partner Consulting Structural Engineers, Inc. since 2000. Interestingly, Chen is working on the design of UC San Diego’s Structural & Material Engineering Building. Chen adds, “nothing can be more exciting than designing a building at the school [from which you graduated...]”. Chen and wife, Felicia (1999, B.S. Biochemistry; pictured at left), are expecting their first child this summer.

1999 Kent (Qi-Song) Yu
PH.D. STRUCTURAL ENGINEERING
Yu, Associate Principal at Degenkolb Structural & Material Engineering, was selected as a winner in “40 under 40” by Building Design and Construction, January, 2008. Yu adds “I’m always proud of being a UCSD alumnus.” Kent, we’re proud of you!

1993 Junling Sun
PH.D. STRUCTURAL ENGINEERING (AMES)
Son (pictured at left) is Chief Engineer of two of the most innovative bridges over the Yangtze River in Chongqing, China.

2003 Dave K. Adams
B.S. STRUCTURAL ENGINEERING (AMES)
Adams is a Structural Engineer with Lane Engineers, Inc. in Tulare, California. Adams’ book, Structural Engineer’s Professional Training Manual, was published in 2007 by McGraw-Hill.

What’s new with you?
Please update us on your professional activities and personal achievements. Your information may be included in an upcoming newsletter. Submit your information online, including address changes, at: http://www.jacobsschool.ucsd.edu/alumni/

Events - Fall 2008

Jacobs School of Engineering Alumni Event
Monday, September 8, 2008
San Diego Padres vs. Dodgers, Petco Park. Tail Gate Party at 5:30pm; game time 7:05pm; $25.00 each. Contact Linda Jones (lindajones@ucsd.edu) or 858-822-4562 for tickets.

Campus Emergency Response Team Academy
September 9-25, 2008, UC San Diego
Three sessions are offered to students, faculty and staff through Enrollment Central. Training covers; disaster preparedness, light search and rescue, team organization, disaster psychology, disaster medical operations, terrorism and fire extinguisher training. Visit http://blink.ucsd.edu/go/cert for more information. Presented by Continuity & Emergency Services.

Fall Term 2008: Begins Monday, September 22.

Structural Engineering Department Orientations
Tuesday, September 23, 2008
Undergraduates: 1:00-2:00pm, Pepper Canyon Hall-106
Grad Studies: 2:30-4:30pm, SERF 341

Ground Breaking Ceremony and Reception
for the Structural and Materials Engineering building
Friday, October 24, 2008, 3:00 - 4:30pm
Our undergraduate seniors gathered with SE faculty and staff for the Third Annual Senior Reception at Eucalyptus Point on the UC San Diego campus on May 27, 2008.

For the names of SE's recent Ph.D. and M.S. graduates, please see page 2.