GREETINGS ALUMNI & FRIENDS!

We have had an incredible Spring term here at the School of MIME, and perhaps the best part is taking a moment to share with all of you the news of our accomplishments—leading student research, national honors for our student chapter groups, and notable faculty milestones. I could not be prouder of the “season” we’ve had in 2014, and we expect more great things to come. It is hard to believe that we now say goodbye to another outstanding graduating class of MIME engineers... but, of course, we also get to welcome them to the MIME alumni community. Keep a lookout over the summer months for how you may contribute to our 125-year school commemorative efforts. We welcome your insights at any time.

Robert Stone
There are terrific measurable benefits reaped by the use of wind energy. But, it is a fact: all energy sources, alternative and renewable among them, have some impact on the environment.

In the case of wind power, the turbines put flying animals at risk. The creatures are killed in two ways. Bird fatalities are caused by impact with the blades; with bats the pressure wave from the turning blades hits the bats, and damages their internal organs. An Oregon State research team led by associate professor of mechanical engineering, Dr. Roberto Albertani aims to see what can be done to prevent this.

The project, “Remote Monitoring of Avian and Bat Interactions with Offshore Wind Energy Facilities,” involves the design, deployment and testing of an integrated onboard sensor array that monitors for avian and bat interactions, and then transmits post-strike images and data for analysis.

The sensor is designed to detect a strike as well as provide taxonomic classification of the animal involved in the collision, and injury and death from eddy currents in the wake of revolving wind turbine blades. Albertani’s research is especially important for birds that are an endangered species.

Meanwhile, operators of offshore wind farms will have an increasing interest in technology that can reduce incidents of impact, as the investment into wind facilities expands—and the data on bird deaths collects.

Power companies have faced hefty fines for activities that endanger animal life. BP was fined $100 million for harming and killing migratory birds in the 2010 Gulf Spill.

Western power utility Pacificorp was fined more than $10 million dollars in 2009 for electrocuting 232 eagles along power lines and substations.

In November 2013, power company Duke Energy was fined $1 million for killing 14 golden eagles, a protected species, and about 150 other birds on two wind farms in Wyoming. This was the first enforcement of federal bird protection laws against a wind energy facility.
Albertani’s research could lead to commercial strike-detection equipment, and such technology could be helpful for offshore wind to avoid harming and killing birds, as well as to avoid the costly fines. “By understanding the current and potential environmental issues associated with offshore wind, we can try to minimize these impacts and better support the development of sustainable energy sources,” Albertani said.

The bird-blade impact tests for the offshore wind energy facilities project took place in a curious location – the arid spaces in the middle of New Mexico. The North American Wind Research and Training Center at the Mesalands Community College (MCC) in Tucumcari, New Mexico, has an operational wind turbine, and it part of the collaborative research effort with Oregon State.

The turbine and other facilities at the wind center are used to train MCC students to become qualified wind energy technicians, but to also contribute to research of wind energy technology.

Albertani explains the critical partnership: “First it is very difficult to gain access to a commercial wind facility, and ask for the turbine to shut down in order to conduct your tests. Second, there are still no operational offshore wind facilities off U.S. coastal waters.”

Albertani notes that carcass collection, a common method for gathering data on animals in the terrestrial setting, is quite inefficient in the offshore marine environment.

There are two endangered seabirds in the Pacific Northwest, the marbled murrelet and the short-tailed albatross, which could be harmed by increased presence of offshore wind power facilities in the region. The affected species of bats are not endangered.

With graduate students, Jeremy Flowers and Josh Wilcox, the researchers used tennis balls to mimic bird strikes; with the initial “strike data” the team can investigate the mathematics needed to develop a bird-security system. If a turbine could recognize when it is hit by a bird, it could slow down or stop to minimize risks to other birds in the area. Not only will this save birds, it will reduce some business risks associated with the environment for offshore wind energy development.

The Golden Field Office, funders of the research, supports DOE’s Office of Energy Efficiency and Renewable Energy (EERE) in the development and commercialization renewable energy and energy-efficient technologies.

Other team members include Robert Suryan (Oregon State Hatfield Marine Center), Brian Polagye and Trevor Harrison (Northwest National Marine Renewable Energy Center, University of Washington, Seattle) and the National Renewable Lab (NREL).

more MIME sustainable energy projects...

MUTHERM, WIRELESS SENSOR FOR GAS PIPELINES, WINS DOE PRIZE

Mohammad Ghazvini, a post-doctoral researcher in the School of MIME Microscale Thermal and Flow Phenomena Imaging Laboratory with Dr. Vinod Narayanan, won the Transformational Idea award at the May 2014 FLoW competition at Caltech in Los Angeles, Calif. The $5,000 award is given to groundbreaking pre-commercial research with large potential impact on energy sustainability and efficiency.

Dr. Ghazvini is developing MuTherm, a flameless heat source that can be used in conjunction with a thermoelectric unit (instead of batteries) to power wireless sensors in natural gas pipelines. The project receives financial support from Oregon State’s Venture Funds, and mentorship from OSU’s Advantage Accelerator program.

The annual FLoW (First Look West) competition is supported by the Western Region of the DOE’s National Clean Energy Business Plan Competition (NCEBPC), and it aims to reduce U.S. dependency on international energy supplies. FLoW’s mission is to support the development of entrepreneurial talent within American universities, and to accelerate the movement of leading edge technologies out of the lab and into the marketplace.
DR. PORTER JOINS MATERIAL HANDLING COUNCIL, AND IIE BOARD OF DIRECTORS
Industrial engineering associate professor Dr. David Porter has been invited to join the College Industry Council on Material Handling Education (CICMHE) as an academic member of the class 2014-2017. CICMHE includes many academic thought leaders in the areas of material handling and facility logistics that work side-by-side with industry professionals to promote Material Handling and Logistics education in colleges, universities and business organizations throughout the world.
Porter also has been elected to the Institute of Industrial Engineers Computer and Information Systems Division Board of Directors. The group of incoming directors includes Gerald Knapp from Louisiana State University as a president-elect, and Sung Won Han from NYU Langone Medical Center, Mehdi Khazaee from University of Louisiana-Lafayette.

DR. HURST NAMED EMERGING SCHOLAR; ROBOT MABEL IN CHICAGO EXHIBITION
Robotics assistant professor Dr. Jonathan Hurst, has won Oregon State’s 2014 Phi–Kappa–Phi Emerging Scholar Award. Dr. Hurst is a co-winner with Dr. Paul Ha–Yeon Cheong of Chemistry. The OSU chapter of the Honor Society of Phi Kappa Phi has established the Emerging Scholar Faculty Award in order to recognize non-tenured faculty for outstanding research or creative activity in their field of study. Among the Dr. Hurst’s accomplishments is the development of MABEL, the world’s fastest two–legged running robot. MABEL currently is on display at The Field Museum of Chicago, as part of “The Machine Inside: Biomechanics” exhibition.

DR. DOOLEN ENTERS IIE’S ELITE SOCIETY FOR HEALTH SYSTEMS
The Society for Health Systems, a society of the Institute for Industrial Engineers (IIE), has named Dr. Toni Doolen to the membership of its SHS Diplomates. Dr. Doolen is a School of MIME Professor and Dean of the Oregon State University Honors College. The elite status award comes in recognition of Doolen’s contributions to industrial engineering and healthcare communities. She is one of just 56 industrial engineers recognized with this honor.

INDUSTRIAL SUSTAINABILITY LAB FEATURED IN “INDUSTRIAL ENGINEER”
Discussions of sustainable manufacturing are generating headlines for industrial engineering assistant professor Karl Haapala. The work of his lab, Industrial Sustainability Laboratory, and IE Ph.D. candidate Hao Zhang is featured as a Front Line article in the April 2014 “Industrial Engineer” magazine and as the feature article in the April 2014 issue of “Industry Today.” The research, which presents a two–stage sustainability assessment method for a production work cell, also appears in the “Journal of Cleaner Production.”

DESIGN ENGINEERING LABORATORY PARTNERS IN WHITE HOUSE MANUFACTURING INITIATIVE
Oregon State University and the School of MIME’s Design Engineering Laboratory have been chosen as one of the key partners in a new Digital Manufacturing and Design Innovation Institute, announced by President Obama with $70 million in federal support. The UI Labs in Chicago, Ill., is to be the lead institution in this initiative, which also is expected to attract $250 million in support from other academic, industry and government organizations. Collectively, about 70 academic and industry participants hope to revolutionize the way that things get built. OSU’s research in this field will continue to assist regional industries including such companies as Daimler Trucks, Blunt, PCC Structural, ESCO, Intel, Xerox and HP. Drs. Matt Campbell, Bryony DuPont, Chris Hoyle, Bob Paasch, Rob Stone and Irem Tumer are principal investigators of the Design Engineering Lab.
STUDENTS AND CHAPTER GROUPS

TEAM VIGIR WILL COMPETE IN DARPA ROBOTICS FINAL

Team ViGIR, a robotics team comprised of students from TORC Robotics, Technische Universität Darmstadt, Virginia Tech, and Oregon State MIME graduate student Alex Goins advised by Ravi Balasubramanian, has advanced to the final round of the DARPA Robotics Challenge. The team that produces the most competitive robot will win a $2-million cash prize in December 2014. The DARPA challenge aims to produce a robot capable of performing in a disaster recovery setting, whether a natural or manmade hazard. Goins’ Team ViGIR placed tenth, tied with another school, and will split the $1 million in annual funding with that school.

ENERGY SYSTEMS ENGINEERS WIN PROJECT OF THE YEAR

The Oregon Association of Professional Energy Managers (APEM) awarded the APEM 2014 Student Project of Year to an Energy Systems Engineering (ESE) Capstone team of Chaz Branson, Stephen MacDonald and Daniel Shaw. The ESE team was sponsored by Energy Northwest to design a hydrolysis plant to store energy during excess supply periods in the spring and then generate CO₂-free electricity during peak demand months in the winter. The ESE project was unanimously selected by the APEM evaluation team for excellence among several projects.

SCHNELL NOTED FOR STUDENT LEADERSHIP

Kristina Schnell, an Energy Systems Engineering student, received one of Oregon State’s 2014 Women’s Center Student Leader Awards. The annual May awards ceremony honored five other student and three Women of Achievement winners.

“A STORY ALL ABOUT INDUSTRIAL ENGINEERING”

Oregon State IIE Student Chapter, advised by Dr. Hector Vergara, has won the 2014 IIE national video competition with their submission “A Story All About Industrial Engineering” aimed to answer the question “what is industrial engineering?” as well as attract high school students to the major. Well done, and no small task! Their video is set to the theme song of 90s sit-com “The Fresh Prince of Bel-Air.” Watch the video on YouTube (search on youtube for “Oregon State Industrial Engineering” and it pops right up.) The video includes a fabulous cameo from IE professor, Dr. Ken Funk. Brandon Booth is the IIE Student Chapter President.

SOCIETY OF AUTOMOTIVE ENGINEERS

SWEET SEASON FOR GFR AND BAJA RACERS

Baja Racing Reclaims Top Spot

Oregon State Beaver Racing Baja Team kicked off their race season with a victory in Texas. The team finished first overall against 100 other teams at the race hosted by University of Texas El Paso on April 24-27. Here are their standings from the competition’s multiple events that brought a victory home, their first overall win since 2009:

• 2nd place maneuverability
• 2nd place endurance race
• 3rd place business presentation
• 3rd place in overall dynamics
• 4th place design

GFR Takes 4th National Title

The Global Formula Racing Team won the 2014 Formula SAE at the Michigan International Speedway, in Brooklyn, Mich., placing first overall – supported by top finishes in Skid Pad, Autocross, and Endurance categories. The Oregon State-Duale Hochschule Baden-Württemberg-Ravensburg team competes against more than 100 teams and has won this important national race – generally considered to be the U.S. championships – four times in the past five years. Congratulations on keeping GFR on top!

• 1st in Skid Pad
• 1st in Autocross
• 1st in Endurance
• 1st Overall
Kevin Stangeland started at ESCO Corporation in 1998 as a gage design engineer and worked his way up to director of engineering for the construction and industrial division. He is in charge of six product engineering teams and two new product development teams. His lead on a new product development project, Nemisys Cast Lip System, won Mining Magazine’s “Most Innovative Product for Surface Mining” in 2012.

Kevin Stangeland learned many things as a mechanical engineering student at Oregon State University. But most importantly, he became a better learner. “The program at Oregon State is challenging. It taught me not to give up, as well as how to learn,” Stangeland said.

Understanding how to assimilate new ideas, solve problems, and translate knowledge into action have been vital to Stangeland’s career.

Headquartered in Portland, Ore., ESCO is an independent developer and manufacturer of highly engineered wear parts and replacement products for mining, infrastructure development, oil and gas, and industrial applications.

Benjamin Rivera had three job offers after graduation, turning down even the most lucrative to work for Leatherman Tool. He doesn’t regret the decision.

“It sounds cliché, but I believe I’m successful because I do what I love. I get up every day and get excited to go to work. That’s my definition of success,” Rivera said.

Rivera is the president of Leatherman, the multi-purpose tool company with more than $100 million in annual revenue and 500 employees in the Portland area.

During his 20-plus years helping build the company, Rivera has achieved many accomplishments, including more than 100 U.S. patents for product design. His design for the WAVE Leatherman tool is part of the permanent collection within the Museum of Modern Art in New York.

As a mechanical engineering student at Oregon State, Rivera’s social network was equally important to academics. He cites close mentorship from Professor James Welty as an important factor in his professional and leadership development.

Thomas Teramura’s fondest memory as an Oregon State student is racing a derby car made from old bicycle parts and junkyard metals at an Engineering Day competition. He was the driver and won first place. “It was a little scary because we didn’t have the best materials,” Teramura recalled.

He now works with some of the world’s most high-performing materials.

Teramura is VP of technology and innovations for PCC Structurals, a division of Precision Castparts Corp. His contributions have been integral to the industrialization of some of the world’s most sophisticated and complex investment castings in exotic titanium and superalloy materials. He holds a patent in ceramics materials, and has spent 30 years in the casting industry.

As a leader in a cutting-edge industry, Teramura stresses the role of personal contact in engineering. “Connect with people,” he said. “Even though we talk about automation as a result of new technologies, it still takes people to build, service, sell, and buy these things.”
STUDENT RESEARCH EVENTS

2014 HP INNOVATION AWARD GOES TO MIME CAPSTONE TEAM AT ENGINEERING EXPO DAY

School of MIME’s Unified Medical Instrument team – Josh Hille, Chris Nesler, and Jay Stevenson, advised by Dr. Ken Funk and graduate student, Tylee Cairns – won the 2014 Hewlett Packard Innovation Award.

The Capstone Design project was on display with more than 200 other engineering projects at the College of Engineering’s 2014 Engineering Expo on May 16. Three HP engineers at the Expo judged the projects, looking for innovative design, and quality of presentation.

Bauer Labs sponsored the project with the goal of developing a second-generation UMI for use by physicians, nurses, and other healthcare providers conducting routine patient checkups. The end-purpose is to reduce the number of medical peripherals required to do a standard checkup, allowing healthcare providers to be more mobile, especially in areas of poverty. School of MIME hopes to continue research with the goal of providing effective, low-cost health screening to under-served populations in the U.S. and throughout the world.

CCE-MIME GRADUATE RESEARCH EXPO GRAND PRIZE WINNER AT PORTLAND EVENT

Industrial engineering graduate student Raschelle Barkume, advised by Dr. Ken Funk, was the grand prize winner at the Portland 2014 Graduate Research Expo, an event co-hosted by the School of Civil and Construction Engineering and MIME.

Barkume (pictured left) won a new iPad Air as decided by public voting at the event. She presented “UI Design for the Modern Soldier — Designing Relevant, Intuitive User Interfaces for Complex Laser Targeting Systems.”

Other top MIME graduate research project at the Expo are:


OREGON STATE’S FIRST FIRST ROBOTICS AIMS TO BECOME AN ANNUAL EVENT

School of MIME and the Oregon State Robotics Club helped to organize a district level FIRST Robotics competition at the Oregon State campus. FIRST — (For Inspiration and Recognition of Science and Technology) — is a national non-profit group that strives to inspire and challenge student in math and science at a young age. The FIRST Robotics Competition is the highest age bracket within the FIRST Progression of Programs.

At the March 4–5 Corvallis event 30 high-school and middle-school robotics teams in the Pacific Northwest district competed, scoring points to advance to national level competitions. OSU hopes to continue its partnership with FIRST in future years.
Mechanical, Industrial & Manufacturing Engineering

The Oregon State Robotics program will have an eventful summer kicking off their inaugural year of a National Science Foundation-funded Research Experience for Undergraduates, “Robots in the Real World.” The REU program is a national model for offering summer research opportunities for undergraduates, and the OSU grant has the funds to run for three years.

The brainchild of Drs Cindy Grimm and Bill Smart, the REU covers numerous areas of robotics that deal with the real world; from remote marine sensing, to building and controlling legged robots, to picking up and manipulating objects, to how robots can incorporated into our daily lives. It was a lightning-fast turnaround from final NSF funding approval to the step of selecting from the pool of enthusiastic applicants – altogether three weeks.

The 10-week summer school runs from June 15 to August 23, houses 10 students at the Corvallis campus, and also provides workshop opportunities at the nationally-recognized O. H. Hinsdale Wave Research Laboratory in Newport, Ore.

The program provides a novel opportunity for students to design follow-on robotics research at their home institution, and to return to Oregon State during the academic year in order to use the robotics facilities here to conduct that research.

Grimm and Smart aim to inspire students to leave the program excited about continuing to do research in robotics, and, inevitably, this will be an excellent recruitment channel for the Oregon State Robotics graduate program.

The offerings are listed at http://robotics.oregonstate.edu/robots-real-world-projects.

NSF FUNDS ROBOTICS FOR SUMMER RESEARCH

on the horizon...

SPRING TERM GRADUATION

We welcome and congratulate our newest graduates at the School of MIME spring term commencement ceremony on June 13 at the La Sells Stewart Center this month. Oregon State’s graduation ceremony on June 14 features keynote speaker Dr. Ann A. Keissling, Ph.D., ‘71 biochemistry, biophysics.

125 YEARS CELEBRATION

The School of MIME will mark an incredible milestone this coming fall, marking 125 years of incoming students. We will keep you posted on the celebration, and how we hope to include MIME alumni in the the event. Please continue to send your comments and suggestions.

ENGRT MGMT GOES VIRTUAL

School of MIME industrial engineering will expand to include an online masters degree with an engineering management option. Expected to fully launch in Fall 2014, the 45-credit degree will take three years to complete in the ramp-up phase. Faculty have taught several courses online, administered through e-campus, ahead of this rollout.

MIME EXCELLENCE FUND

School of MIME will welcome four additional faculty for the 2014-15 academic year. We continue to rely on your support for this track of growth and ongoing success.

Please consider making a donation to support our student-centered priorities, which include:

1.) Student activities such as SAE/GFR, DARPA projects, AIAA, etc.
2.) Graduate student fellowships to attract the best students from Oregon and across the nation.
3.) Research lab start-up funds that attract the best faculty talent ready to engage in both research and teaching.

To help out, please contact Rob.Stone@oregonstate.edu, or make an online donation to the MIME Excellence Fund.