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MENU

Oakland University

**School of Engineering
and Computer Science**



The official newsletter serving students, alumni, faculty, staff and friends of the School of Engineering and Computer Science at Oakland University.

July 2013
Volume 2 - Issue 4

International Champions! Oakland Engineering students grab 1st place at IGVC

The Oakland Robotics Association took the top prize at the 21st annual Intelligent Ground Vehicle Competition.

The team placed first overall this week, among 53 collegiate teams from across the globe, and brought the coveted Lescoe Cup home to Oakland University. The team's placement was a first for ORA and OU.

IGVC challenges teams to compete autonomous robotic vehicles on an exterior course with defined lanes, GPS waypoints and random obstacles in an outdoor field environment. The four day event is held annually on Oakland University's campus.

ORA also placed second in both the Design Competition and the Joint Architecture for Unmanned Systems (JAUS) Challenge, and third in the Autonomous Navigation Challenge.

"We at the School of Engineering and Computer Science are very proud and excited for our students and their adviser for winning first place at the 21st Annual Intelligent Ground Vehicle Competition," Louay Chamra, Dean of the School of Engineering and Computer Science, said. "This accomplishment reflects commitment and hard work on the part of all of our SECS Robotic Team, and we celebrate this milestone with them and applaud them on their triumph."

OU Electrical and Computer Engineering Professor KaC Cheok, Ph.D, is a co-chair and co-founder of IGVC and the ORA adviser.

"The OU robotics team is a multi-disciplinary group of engineering students whose talents peak simultaneously- mechanical, electrical, computer, mechatronics, and systems control engineering," he said. "They are motivated, confident, knowledgeable, critical, creative, tireless and ambitious. And they get it done!"

Micho Radovnikovich, ORA Adviser and systems engineering doctoral student, said the team spent about 600 hours developing and building their autonomous robotic vehicle, 'Replicant' at a cost of \$14,000.

"My favorite part of this year's IGVC was seeing our robot do exactly what we wanted it to do," Radovnikovich said. "This is the most maneuverable robot that ORA has ever had at IGVC."

Jerry Lane, co-founder, co-chair and chief judge of IGVC, said participating students are given a professional edge in the industry.

"We're finding our graduates are starting companies, going into defense and going into the automotive industry," said Lane, who is retired from TACOM/TARDEC. "IGVC takes students and makes them scientists and engineers and these students can be put to work, right away, without unnecessary training because they have the relevant experience, design skills and architectural skills from our competitions."

Technologies utilized in the process are widely applicable and are quickly being commercialized – such as in the development of vehicles that drive and park autonomously, brake automatically and execute lane detection, among other features.

Bernard Theisen, co-chair and judge, said IGVC has sponsors in defense, as well as tier 1 and 2 automotive suppliers.

"IGVC is a good exercise and product realization that supports Science, Technology, Engineering, and Mathematics (STEM) and helps develop the robotics community in the United States," said Theisen, a technical manager for the Autonomous Mobility Appliqué System at TARDEC.

"The automotive industry is moving in a huge concerted and competitive direction in active driver's assistance systems (ADAS) where cars and trucks help to mitigate accidents," Dr. Cheok said. "We are already seeing the robotics technologies incorporated in the automobiles today-- collision warning and avoidance systems, automatic parking (and more). You'd notice that Continental, Magna, Valeo and Takata, are sponsors of the IGVC."

ORA students attribute their team's success to their experiences within the School of Engineering and Computer Science.

Michael Truitt, an electrical and computer engineering graduate student, joined OU's robotics team in 2010.

"I've always had a passion for hands-on, imagination-driven design and enjoy engaging in the opportunity to build that design," Truitt said. "When I began taking classes at OU, I was always looking for a chance to apply those skills, outside of the generally theory-based courses. Taking classes like Design and Analysis of Electromechanical Systems and Microcomputer-based Control Systems give me a chance to expand on the skills I had been developing and only furthered my desire to reach out the IGVC team."

Unfavorable weather conditions did little to dampen the mood of the teams on the last day of the competition.

"Their spirit was contagious," Lane said. "There was such a level of excitement being there, and watching the students, in the rain, just waiting to get their last turns in before the competition wrapped up-- it was phenomenal."

Theisen said the weather gave students the opportunity to apply creative real-time solutions to their vehicles, such as waterproofing and adding traction.

ENGINEERING IN THE NEWS**New adviser welcomed**

(<http://www.oakland.edu/news/?sid=304&nid=10300>)
OU professor earns NSF grant for medical research
 (http://www.oakland.edu/view_news.aspx?sid=34&nid=10290)

Industry experts to lead Lean Principles and Applications course

(<http://www.oakland.edu/Newsletter/ViewNewsletter.aspx?x=YTn6r2ViapMp%2fcdugk8Rzg%3d%3d>)

OU INC to celebrate graduation of first tenant client
 (https://www.oakland.edu/view_news.aspx?sid=34&nid=10167)

(<http://www.oakland.edu/news/?sid=304&nid=10084>)

OUTREACH EVENTS

Register now for an upcoming camp or workshop.

K-12 STEM Camps

One-week camps for upper elementary, middle school, and high schools for students who do or might have an interest in Science, Technology, Engineering and/or Mathematics (STEM).

Register here (<http://www.oakland.edu/formbuilder/forms.aspx?formid=74516&sid=304>)

Macomb Engineering and Computer Science Summer Camp

Explore exciting and in-demand careers in the fields of industrial, systems, mechanical, computer and electrical engineering, and computer science. Students will also delve into the emerging fields of biomedical and alternative energy. Hands-on activities and simulations such as constructing a solar panel and building electronic motors and assemblies will engage students as they learn about career options in this growing field. Students will also travel to Oakland University's campus in Rochester for an extensive alternative energy tour and visit the Clean Energy Research Center.

Register here (https://ebill.oakland.edu/C21178_ustores/web/product_detail.jsp?PRODUCTID=1159)

To learn more about outreach events and opportunities through the School of Engineering and Computer Science visit [oakland.edu/secs/outreach](http://www.oakland.edu/secs/outreach) (<http://www.oakland.edu/secs/outreach>).

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The School of Engineering and Computer Science is

The Lescoe Cup is named in memory of Paul Lescoe, an IGVC founder and lead robotic engineer at TARDEC.

The 22nd annual Intelligent Ground Vehicle Competition will take place June 6-9, 2014 on the campus of Oakland University. To learn more, visit [igvc.org \(http://www.igvc.org\)](http://www.igvc.org).

For a full list of schools that participated in the 2013 IGVC, click [here \(http://www.oakland.edu/view_news.aspx?sid=304&nid=10218\)](http://www.oakland.edu/view_news.aspx?sid=304&nid=10218).

always interested in hearing from our alumni. E-mail us a few lines about your latest job, accomplishment or relocation to prawdzik@oakland.edu (<mailto:prawdzik@oakland.edu>).



Congratulations to the Oakland Robotics Association, who placed first this week at Intelligent Ground Vehicle Competition. Pictured here with "Replicant" is Prof. KaC Cheok, Parker Bidigare, Matthew Franklin, Mike Truitt, Micho Radovnikovich, Kevin Hallenbeck, Steve Grzebyk, Mike Norman, Lincoln Lorenz and Kiran Iyengar.

Summer K-12 STEM camps bring future engineers to Oakland's campus



Summer K-12 STEM Camps are in full-swing at the School of Engineering and Computer Science. Christopher Kobus, Ph.D., director of outreach and recruitment for the School of Engineering and Computer Science, said he is impressed to see so many students who are already showing a keen interest in science, technology, engineering and mathematics. "From mid-June through mid-July we have had about 230 students rotate through the various STEM camps," Dr. Kobus said. "It is an overwhelming amount of interest in the program here, and it bodes well for the future of STEM education in this area and for the economy." To learn more about Engineering and Computer Science outreach and recruitment opportunities visit [oakland.edu/secs/outreach \(http://www.oakland.edu/secs/outreach\)](http://www.oakland.edu/secs/outreach).

Engineering Center continues to take shape



The School of Engineering and Computer Science's new Engineering Center continues to come along nicely. This photo was taken recently from the Science and Engineering Building.

OU hosts North American Automotive Innovation Summit

Nearly 170 leaders from major automotive manufacturers, their suppliers and North American government officials, as well as exhibitors and students met recently at Oakland University to explore ways to boost advanced manufacturing processes and accelerate environmental innovation in the North American automotive supply chain.

The Summit on Accelerating Innovation to Drive Sustainable Automotive Manufacturing Growth Across North America was co-hosted by OU, the Suppliers Partnership for the Environment (SP), and the Commission for Environmental Cooperation (CEC).

Dave O'Ryan, President of Advanced Technology & Marketing Group and Co-Chair of the Summit, said the goal of this Summit was to bring organizations together to discuss manufacturing sustainability issues in a setting that fostered innovation and education. "This is the first time that SP has reached out to a university in co-hosting an event," O'Ryan said. "Oakland University offered both the academic and geographic settings for a true summit on these issues."

Dean of the School of Engineering and Computer Science at Oakland University, Dr. Louay Chamra, said Oakland University was proud to host North America's leading companies at the Summit on Accelerating Innovation. "The ability to expose the university to a revolutionary way of extinguishing the barriers associated with the move to sustainability increases the credibility of the institution."

Participants and exhibitors who attended the event were given the opportunity to explore topics including Enabling Innovation, Improving the Business Climate and Securing the Talent Pipeline, then collaboratively brainstorm solutions through participation in breakout sessions.

OU INC coordinated a group of students who participated in the sessions while also recording the ideas discussed into the information synthesizing software, ThinkTank™. Data was then assembled and presented in real time for the facilitators and organizers to present during the final session wrap-up.

Led by OU INC Executive Director, Amy Butler, the student technology teams kept in constant contact with home base, the Integrated Resource Center at OU INC, through the use of the ThinkTank™ software. Key data was synthesized into a detailed report for the conclusion of the event. This will provide a platform for companies involved to move forward and develop action plans for implementation of ideas and solutions.

"Having the opportunity to integrate our students, facility, and technology into the Summit was exciting for both Suppliers Partnership members and the university," said OU INC Executive Director Amy Butler. "The Summit gave our students the opportunity to interact with companies, as well as explore innovation in real-life scenarios."

Engineering and Computer Science Brag Corner

News and notes from around the School of Engineering and Computer Science.

Computer Science and Engineering

- **Dr. Mike Wu** attended the IEEE ICSS1 2013 International Conference on Service Science and Innovation in Kaohsiung, Taiwan. There, doctoral student, **Chi-Hsin Huang**, presented a research paper titled "The Web

Services Composition Testing Based on Extended Finite State Machine and UML Model." Dr. Wu presented a research paper titled "Web Service Composition: From UML to Optimization." While at the conference, Dr. Wu also served as a panelist for the panel titled "Service Engineering in a Changing World."

- **Dr. Wenjin Zhou** has been awarded a \$25,000 Research Excellence Fund Support of Biomedical Research on her project titled: "A MRI-based Framework for Measuring Brain Micromorphology and Diagnosis of Neurological Disorders." She will be developing a new computational framework for in-vivo direct measurement of brain tissue micromorphology. These computational tools will operate on diffusion magnetic resonance (MR) datasets of the nervous system and will produce microstructure properties that cannot otherwise be obtained in vivo.
- **Dr. Lunjin Lu** gave an invited talk titled "Semantics and Refinement of UML sequence diagrams: semantics and refinement" at Yangzhou University in Jiangsu, China. He gave an invited on the same subject at Jiangsu University in Jiangsu, China.
- **Dr. Lu** has following papers accepted: Liang Dou, **Lunjin Lu**, Zongyuan Yang and Jinkai Xie, "Towards Mechanized Semantics of UML Sequence Diagrams and Refinement Relation" accepted to the IASTED 24th International Conference on Modelling and Simulation, July 17-19, 2013, Banff, Canada. **Lunjin Lu**, "Parametrizing program analysis by lifting to Cardinal power domains – two examples (technical communications)," accepted to the 29th International Conference on Logic Programming, August 24-29, 2013. ICLP is the top conference in the area of logic programming.

Industrial and Systems Engineering

- ISE undergraduate student **Matt Toter** was invited to the Undergraduate Student Technical Paper Competition at the Institute of Industrial Engineers Annual Conference in Puerto Rico. Matt's paper, titled "Measurement Uncertainty Analysis of a Hioki Power Analyzer and the Positioning of its Current Measurement Clamp," finished fourth out of twelve papers in the competition.
- Congratulations to **Dr. Barb Oakley** for received the 2013 Oakland University Teaching Excellence Award and to **Dr. Chris Wagner** for received a 2013 Oakland University Faculty Recognition Award for Teaching and Service.
- The ISE department offered a not-for-credit certification course on the Siemens PLM ergonomics software Jack in May. The course was funded by the Michigan Economic Development Corp. (MEDC) and was developed with the assistance of Siemens PLM and 4D Systems LLC. A subject matter expert in Jack from 4D Systems taught the week-long course which was attended by engineers and interns from Chrysler as well as ISE students. The ISE department is considering scheduling a second offering of the course in August or September. Contact **Dr. Robert Van Til** (vantil@oakland.edu (<mailto:vantil@oakland.edu>)) or **Dr. Sankar Sengupta** (sengupta@oakland.edu (<mailto:sengupta@oakland.edu>)) to learn more about this certification course.
- Systems Engineering Ph.D. student **Avinash Konkani** is working with the Crittenton Hospital Medical Center to help reduce the adverse effects of hospital noise on patients. Learn more about Avinash's project [here](https://www.oakland.edu/Admin/Newsletter/Editor/www.youtube.com/watch?v=3CixJE8dHo) (<https://www.oakland.edu/Admin/Newsletter/Editor/www.youtube.com/watch?v=3CixJE8dHo>).

Mechanical Engineering

- **Dr. Brian Sangeorzan** taught an undergraduate engineering course in heat transfer at Beijing Jiaotong University. The course has a compressed schedule and ran five days a week for three weeks. Oakland has a two-by-two agreement with the university, which is one of the oldest in mainland China.
- **Dr. Laila Guessous** taught a core engineering course to undergraduate students at the Changchun University of Technology in China's Jilin province. The course, EGR 250, is an introduction to thermal engineering. Oakland formed an educational agreement with the university to create a joint undergraduate program in mechanical engineering in 2012.



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[Coordinate map of Auburn Hills Entrance \(https://www.google.com/maps/@42.672702,-83.220234,16z\)](https://www.google.com/maps/@42.672702,-83.220234,16z)

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