Synopsys Announces 2019 Robert S. Hilbert Memorial Optical Design Competition Results

Annual Competition Recognizes Student Achievements in Optical Design

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Synopsys, Inc. (Nasdaq: SNPS) today announced that students from Columbia University, Rose-Hulman Institute of Technology, and the University of Rochester received awards for their entries in the 2019 Robert S. Hilbert Memorial Optical Design Competition. The annual competition is open to students in North America working toward a bachelor's, master's, or doctorate degree who utilize Synopsys' optical software solutions to perform optical design and engineering research. The awards are granted to students who have submitted papers that demonstrate optical design excellence.

This year's award winners are:

- Audrey Brand of Rose-Hulman Institute of Technology for her project titled, "A Freeform Lightguide for LED Automotive Headlamps." Brand used Synopsys' LucidShape® tool to design and optimize a lightguide that mimics the required pattern of Economic Commission for Europe (ECE) Regulation 112 for vehicle headlight beams. The novel design demonstrates the potential of using freeform optics in headlights to achieve precision light patterns with fewer parts, which can enable cost-to-manufacture savings.

  "I am honored that my design has been selected for this award," said Brand. "During my work on the project, I discovered a passion for freeform optical design and want to continue down that path. I couldn't have gotten this far without the hands-on education at Rose-Hulman, guidance of my mentors, and the educational license from Synopsys."

- Michelle Fuksa of the University of Rochester for her project titled, "Design of a Wide Angle Rectilinear Lens for Large Format Cinema." Fuksa used Synopsys' CODE V® software to design a 12 mm, f/2.8 lens for use with emerging, large-format cinema cameras to capture a large field of view with little to no distortion.

- Ben Moon of the University of Rochester for his project titled, "Dual-Band (SWIR, VIS) Lens for Remote Sensing of Atmospheric Clouds." Moon used CODE V to design a refractive, spherical lens system for remote sensing in the short-wave infrared. The system provides a cost-effective, scalable solution for tracking trends in cloud formation and composition by climate scientists.

  "During a previous research project, my team used off-the-shelf components without fully understanding what our lens system was doing," said Moon. "Learning CODE V and using it to develop a lens system for remote sensing provided a valuable opportunity to see the benefits that can be realized with a powerful lens design software package and an iterative design approach."

- Dean Moore of the University of Rochester for his project titled, "Thermal Collision Detection Lens." Moore used CODE V design and tolerance analysis features to develop a compact thermal camera lens that interfaces with driver assistance software to help prevent vehicle collisions at night.

  "I am extremely grateful to have been selected for an award," said Moore. "The opportunity has strengthened my confidence in studying lens design and makes me excited about my future career."

- Anthony Rizzo of Columbia University for his project titled, "Ultra-Low Power Consumption Silicon Photonic Link Design Analysis in the AIM PDK." Rizzo used the Synopsys RSoft OptSim™ tool to optimize an ultra-high-bandwidth (400 Gb/s) silicon photonic link with minimal energy consumption using American Institute for Manufacturing (AIM) process design kit (PDK) devices for high-performance optical interconnects.

  "Foundries supply PDKs with validated devices to designers, allowing system architects to focus on the design without sinking countless hours and fabrication runs into device optimization," said Rizzo. "The OptSim environment supports advanced photonic-electronic co-simulation with foundry-validated device models, which ensures that the simulated design will closely match the performance of the fabricated chip."

- Erin Sumfleth of the University of Rochester for her project titled, "Underwater Camera Lens." Sumfleth used CODE V to design a camera system that can be attached to remotely operated vehicles for ocean and underwater pipeline cleanup up to 200 meters below the surface.

"This project was inspired by the pollution crisis that our oceans face today," said Sumfleth. "Designing this camera was an incredible experience that educated me on the extent of the problem and deepened my love of lens design. I am honored to receive this award for a project that meant so much to me."

Information about the winning student optical design projects will be on display at SPIE Optics + Photonics (August 13-15, 2019, San Diego, Calif.) in Synopsys booth 329.

About the Robert S. Hilbert Memorial Optical Design Competition

The annual Robert S. Hilbert Memorial Optical Design Competition recognizes excellence in student optical design projects. The competition was established in 2000 by Optical Research Associates (ORA®), now Synopsys' Optical Solutions Group, and in 2009 was named in honor of ORA's former president and chief executive officer, Robert S. Hilbert. The competition is open to students in North America working toward a bachelor's, master's or doctorate degree. To participate, students can enter an optical design class assignment or thesis work that uses Synopsys' optical design software. For more information, visit http://optics.synopsys.com/learn/learn-design-competition.html.

About Synopsys

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