Automated Braking Innovations
Brake Pedal Testing System
Members: Rudy Lytwynce, Benjamin Newland, Danial Rutkowski, and Nick Sadoski
Faculty Advisors: Prof. Dave McDonald
Mr. David Leach
Company: Continental
Industrial Contacts: Mr. Dan Goodrich
Mr. Travis Smith
Presentation: 2 pm | CAS 212
Demonstration: 2:30 pm | CAS 106C
Team Automated Braking Innovations (ABI) is designing and building an automated brake pedal unit for Continental Automotive's hardware-in-loop systems. Currently, Continental uses these hardware-in-loop systems to test brake systems, but the system must have a human operator to apply the brake pedal. Team ABI's unit will be used to automate the brake testing process by controlling the position of the pedal and how much force is applied.

Adexobot-Vision Integration Solution
Versatile Robotics
Grocery Bagging System
Members: Rob Kalinski, Josh Nelson, Brian Parkham, Nathan Shoody, and Dion Tscholkeff
Faculty Advisors: Prof. Jim Devarapla
Dr. Paul Weber
Company: Advenovation
Industrial Contacts: Mr. Adil Shafi
Presentation: 2:30 pm | CAS 212
Demonstration: 3 pm | CAS 126
Team Adexobot - Vision Integration Solution (A-VIS) has been tasked with developing a proof-of-concept system to mimic an automated grocery bagger. The bagger consists of a robot working with a machine vision system and a versatile gripping device. This robotic bagging system will handle a variety of household items such as grocery boxes, cans, and bottles. This project will provide an automation solution that is unique to the robotics industry in its versatility and simplicity of use.

Laser Control Solutions
Self-Leveling Mill Head
Members: Jacob Clark, Logan Cowley, Josh Houika, Steven Jacobs, and Eric Stephon
Faculty Advisor: Dr. David Baumann
Company: Mactech
Industrial Contacts: Mr. Sam Schammel
Mr. Paul Rulach
Mr. Joel Wittenbraker
Presentation: 3 pm | CAS 123
Demonstration: 3:30 pm | SmartZone
Team Laser Control Solutions (LCS) is working alongside Mactech On-Site Machining Solutions to develop and test a real-time self-leveling system for their Large Diameter Facing Machine (LDFM). The LDFM is used to machine large diameter flanges (6'-18') for the oil, marine, and power industries. The goal of this project is to reduce overall machining tolerances from 0.015" to 0.005" using a laser measurement system and a custom designed control loop.

Locomotive Onsite Communication Initiative
Loci Automation
Members: Ronald Bron, Stephanie Peck, Nick-Erik Ravin, and David Vikken
Faculty Advisor: Dr. Joe Moening
Company: Essar Steel Algoma, Inc.
Industrial Contacts: Mr. Denis Ceratin
Mr. David Clingen
Presentation: 2 pm | CAS 123
Demonstration: 2:30 pm | CAS 125
Team Locomotive Onsite Communication Initiative (LOCI) has thoroughly tested a radar based position sensor to be implemented in a proximity warning system for the locomotives (loci) used in the coke loci used in the coke making process at Essar Steel Algoma Inc. The primary goal of this project was to determine if the position sensor could operate through steam, snow, ice, as well as under other harsh environmental conditions. This project is phase one of a longer term project of completely automating the loci.

Marine Refueling Concepts
Liquefied Natural Gas (LNG) Bunkering Barge
Members: Robert Klein, Steven Krentz, Tyler Pavlich, Michael Richardson, and Spencer Thomas
Faculty Advisor: Dr. Robert Hildebrand
Company: Moran Iron Works, Inc.
Industrial Contacts: Mr. Vincen Suprity
Presentation: 1:30 pm | CAS 212
Demonstration: 2 pm | CAS 120
Team Marine Refueling Concepts (MRC) conducted a feasibility study and conceptual design of an LNG (liquefied natural gas) bunkering barge, for Moran Iron Works of Onaway, which would refuel an anticipated fleet of Great Lakes vessels operating on LNG fuel. Design efforts focused on economic scaling of the barge, layout of refueling tanks and equipment, and capsize stability in Great Lakes waves, allowing for LNG sloshing in tanks, the latter phenomenon studied by simulation and wave tank experiments.

Railway Automation Solutions
Robotics Fluid Dispensing
with Machine Vision
Members: Kevin Danhof, Randy Gee, Taylor Heath, Karl Larsen, and Levi Marchenti
Faculty Advisor: Jon Coulard
Company: Pilotec
Industrial Contact: Mr. Jeff Johnston
Presentation: 1:30 pm | CAS 123
Demonstration: 2 pm | CAS 124
Team Railway Automation Solutions (RAS) designed and implemented a robotics workcell to simulate the dispensing of Spikefast, a wood filler product, into railroad ties. A Motoman robot, using custom end of arm tooling and a machine vision system, locates the positions of spike holes on railroad ties as they move by on a continuous conveyor. This project serves as a proof of concept for future development of a wood product dispensing systems in the railroad industry.
The School of Engineering & Technology presents the Class of 2014 Senior Design Project Presentations & Demonstrations

Friday • May 2, 2014
1:30 p.m. - 5:00 p.m.
in the Center for Applied Science and Engineering Technology

For more information about LSSU’s School of Engineering & Technology
www.lssu.edu/eng or 906-635-2207

Solar Film Innovations
Window-Based Photovoltaic Systems
Members:
Greg Balcom, Victor Dufflin, Brandon Everret, Mitchell Paradis, Apurv Shankar, and Randy Sims (co-op student, fall 2013)
Faculty Advisors:
Dr. Jaskirat Sohli
Dr. Paul Weber
Companies:
3M, Little Traverse Conservancy
Industrial Contacts:
Mr. Tim Hebrinck
Mr. Charles Dawley
Presentation: 3 pm | CAS 212
Demonstration: 3:30 pm | CAS 212

Welcome to the School of Engineering & Technology

Industrial Technology Directed Senior Project

Member: Brian Horn
Faculty Advisor: Jeff King
Customer: LSSU
Industrial Contacts: Dr. Joe Moening
Presentation: 3:30 pm | CAS 123
Demonstration: 4 pm | CAS 125
This project updates lab equipment (Part Checker) for the EGRS/65 course to use a current generation Allen-Bradley PLC and HMI. Hardware, ordering and implementation of the hardware, and testing the updated equipment are required for completion of the project.

Solar Film Innovations Window-Based Photovoltaic Systems

The Engineering Living Learning Community (Engineering House) designed and built a 3D printer at a significantly lower cost than LSSU’s current 3D printer. The new device will be used to print souvenirs for Robotics summer camps. Many avenues were explored to reduce the component cost as well as the operating costs. Off-the-shelf components were used where possible, with remaining components machined by the students.

Engineering House

Faculty Advisors:
Dr. Joe Moening
Dr. Jaskirat Sohli
Presentation: 2:30 pm | CAS 212
Demonstration: 3 pm | CAS 310
The Engineering Living Learning Community (Engineering House) designed and built a 3D printer at a significantly lower cost than LSSU’s current 3D printer. The new device will be used to print souvenirs for Robotics summer camps. Many avenues were explored to reduce the component cost as well as the operating costs. Off-the-shelf components were used where possible, with remaining components machined by the students.

The School of Engineering & Technology comprises the following disciplines:

• Computer Engineering
• Electrical Engineering
• Mechanical Engineering
• Manufacturing Engineering Technology

All of the Lake Superior State University senior engineering and engineering technology bachelor’s students are required to complete a challenging senior design project. The students work in multidisciplinary teams and use a composite of their technical and general education courses to successfully complete these projects. The intention of the senior design project is to provide valuable engineering experience that will help students transition from academia to industry or graduate school. Each project requires a detailed technical engineering analysis, development and follow-through to provide a realistic experience for our graduates.

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