



**Adapt.  
Engineer.  
Prevail.**



**Michigan  
Technological  
University**

**COLLEGE OF ENGINEERING**  
MOBILITY INITIATIVES

# Hands on. Join us.

ADVANCE THE FUTURE OF MOBILITY

MASS REDUCTION

HUMAN SYSTEMS

CONTROL & COMPUTE

INTELLIGENT INFRASTRUCTURE

THE SUCCESS OF AUTODRIVE.....	4
MODULAR AUTONOMOUS TEST FACILITY .....	6
MARINE MOBILITY .....	8
ADVANCED POWER SYSTEMS.....	10
ROADS, RAILS, AND SNOWMOBILE TRAILS .....	12
EXTRATERRESTRIAL MOBILITY .....	14

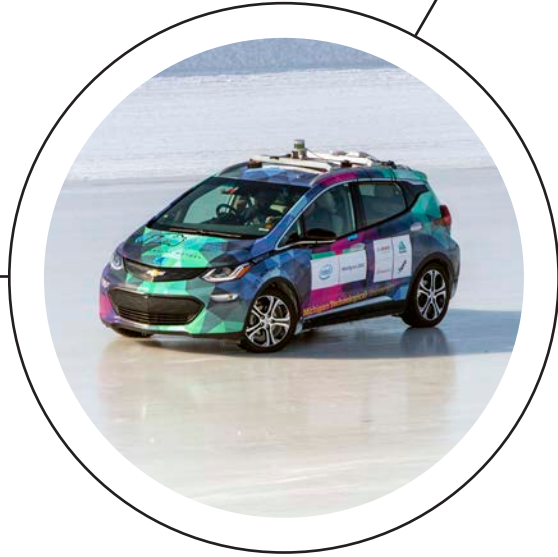
Continuous improvement is a top priority to maintain our collaborative, world-class research and education.

**POWER CONVERSION**

**FUEL & ENERGY**

**UNSTRUCTURED ENVIRONMENTS**

Michigan Technological University is an Equal Opportunity Educational Institution/Equal Opportunity Employer that provides equal opportunity for all, including protected veterans and individuals with disabilities.



# Hands on. Hands off.

## THE SUCCESS OF AUTODRIVE

AutoDrive Challenge is a nationwide competition to achieve SAE Level IV autonomy with teams of students integrating sensors and controls. The competition is from larger schools with bigger budgets. And our AutoDrive team has proven that Michigan Tech students innovate to succeed.

Our team outfitted a Chevy Bolt with sensors, controls, and processors to operate in an urban driving course, placing third overall in the four-year competition, and earning the second most trophies in the final year. We were selected to participate in AutoDrive Challenge II.

Our students explore more than mobility as they become the next generation of engineers—not only integrating principles of robotics, controls, and systems engineering with fiscal efficiency, but also analyzing and mitigating failure modes, thoroughly testing designs and prototypes, and considering important societal implications.

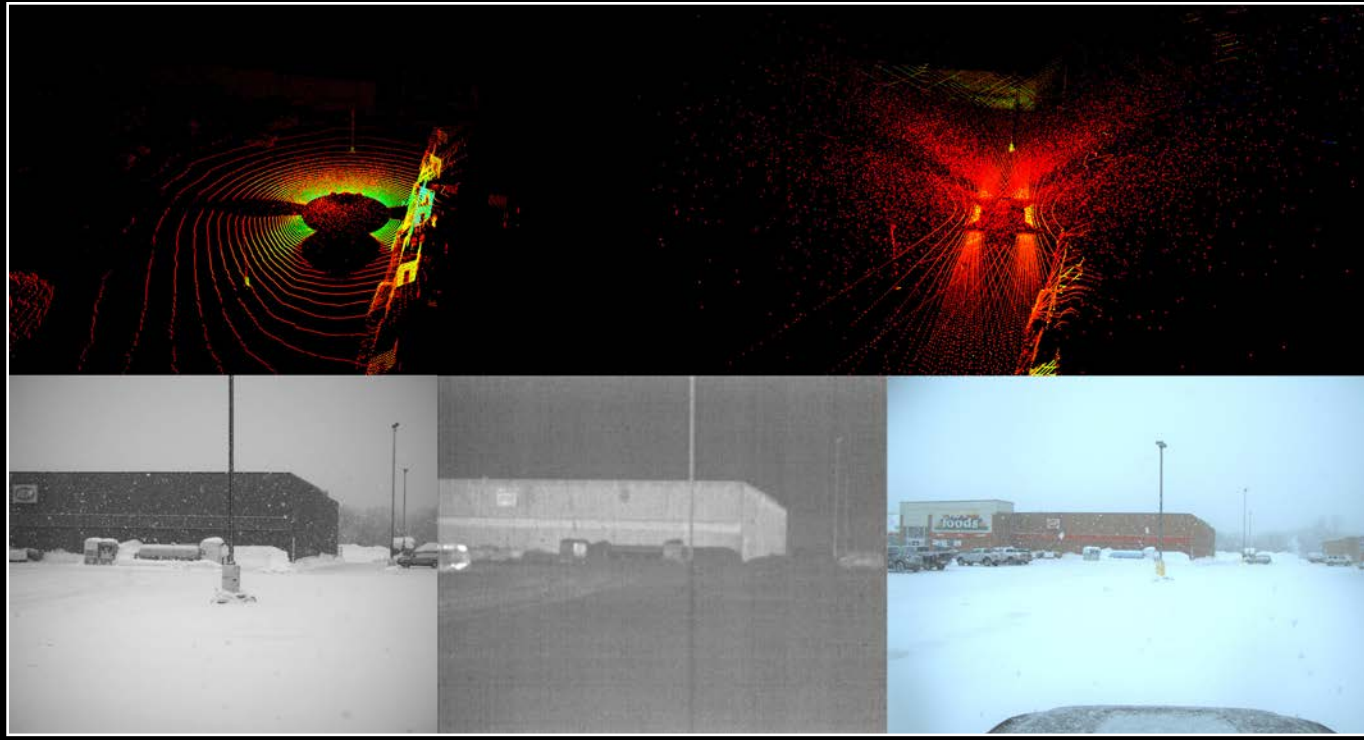
To prevail in competitions at this level, we need an on-campus shared mobility testing workspace that provides easy access and public visibility.





# Autonomy begins with sensing reality

Merging sensor data in real-time to identify roadways, signs, and hazards requires extensive coding and research on environmental impacts, such as scattering from snow.



# Hands on. Hats off.

## MODULAR AUTONOMOUS TEST FACILITY

Faculty and researchers across campus are committed to developing reliable autonomous solutions and need a location—close to campus—for students to test and rapidly iterate.

A modular autonomous test facility will allow our researchers and students to run urban and rural test loops, analyze human factors, and enhance robotics.

This aligns with our mission to deliver world-class education, research, and leadership to the State of Michigan, the nation, and the world.





# Hands on. Dive in.

## MARINE MOBILITY

From secure and decentralized swarms of subsurface gliders to the Marine Autonomy Research Site (MARS), our researchers advance the capabilities of marine and subsurface autonomous craft.

Validating algorithms under controlled wave tank and open water environments, autonomous craft perform challenging missions.

Our faculty and students empower sustainable development through the analysis of flow patterns and the optimization of wave energy.

Using both the outdoor lab of Lake Superior and a world-class indoor wave tank, our students use models and realistic conditions to develop renewable energy solutions.

Help us build research partnerships to enhance student-supported research through senior design projects and graduate studies.

### Meet "Iver3"

This underwater robot can dive up to 330 feet and cover 20+ miles of water, providing ultra-high resolution acoustic images to track features, map fish beds, or explore shipwrecks.







An autonomous monitoring system deployed on Lake Superior for testing.



The Great Lakes Research Center is our operational test facility validating autonomous, sea-based system controls like this jet ski.



Our wave tank with state-of-the-art instrumentation allows repeatable testing under ocean-like conditions.

# Hands on. Power up.

## DRIVING MOBILITY EFFICIENCY

In the Advanced Power Systems Laboratories (APS Labs), students utilize the combustion chamber, run engine tests on dynamometers, test propulsion system components and full vehicle test cells, and analyze data from a fleet of electric vehicles in a vehicle-to-vehicle and vehicle-to-infrastructure arrangement.

Dedicated to educating students for the fourth industrial revolution, research has focused on big data, artificial intelligence, and machine learning across campus.

Students are not only trained to be the engineers a company needs today, but also the engineers a company will need in years to come.

Michigan Tech students play a key role in research while working with our renowned faculty. You can cultivate their experiences by supporting autonomy and mobility research.





# Hands on. Hang on.

## ROADS, RAILS, AND SNOWMOBILE TRAILS

Engineering education at Michigan Tech extends far beyond the classroom. With coaching and guidance from faculty mentors and industry sponsors—and a focus on sustainability and design thinking—our students invent new products, services, and solutions.

Tech's four vehicle competition Enterprise teams—Blizzard Baja, Clean Snowmobile Challenge, Formula SAE, and Supermileage Systems—share talent and resources.

Our Rail Transportation Program and Railroad Engineering and Activities Club (REAC) develop leaders and technologies for 21st century rail transportation through field visits, integrated coursework, and industry-sponsored projects.

From the lab to the track, champion our students' experiences with computer systems, software solutions, and human factors.



**250+**  
student organizations  
at Michigan Tech



# Beyond the classroom

Our students enjoy exciting opportunities to grow, serve, connect, and lead—in the lab, in the field, and around the globe. While working on projects like these and many more, our students find their fit.

# Hands on. Look up.

## EXTRATERRESTRIAL MOBILITY

With an eye on the next frontier, research is being conducted across campus to demonstrate satellite performance and promote human space exploration.

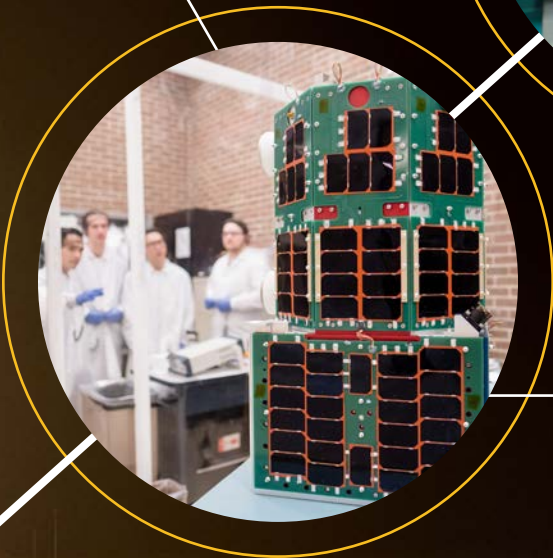
Whether building a nanosat that can classify other satellites' behavior, listening for geographic dispersion, or detecting cloud height and winds, the Aerospace Enterprise has launched satellites, dreams, and careers.

Human space exploration starts with the development of lighter, stronger, and tougher polymers from carbon nanotubes and resins.

Opportunities for manned space missions are further propelled by the need to reduce fuel and oxidizers as payloads by extracting those sources from ice and rock.

Create opportunities by challenging students to solve complex problems, find innovative solutions, and fuel their career contributions.





# 800+ students' dreams realized

Since its inception in 2004, the dream of every student in the Aerospace Enterprise was to launch a nanosatellite. It happened! Now students are collecting and analyzing data from space.





**Hands on.**  
**Hands in.**

Tomorrow needs Michigan Tech.  
Tomorrow needs you.



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