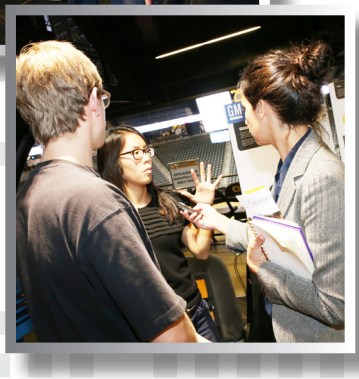
Capstone Design Expo
Spring 2018



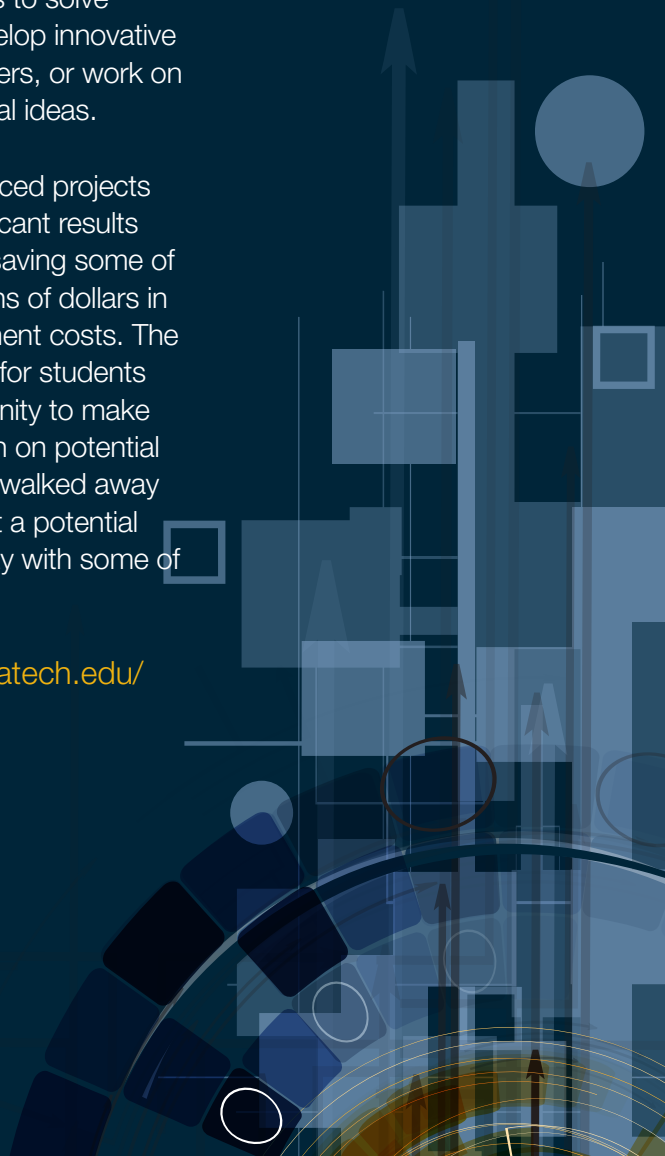
Georgia Tech Mechanical Engineering
The George W. Woodruff School of Mechanical Engineering

Capstone Design Expo

The Capstone Design Expo is one of the largest student design expos in the U.S., showcasing Georgia Tech's graduating seniors as they present innovative projects designed and built during the Capstone Design Course. Students work in teams to solve industry problems, develop innovative tools to assist researchers, or work on their own entrepreneurial ideas.

Past expos have produced projects that have yielded significant results for industry sponsors, saving some of them upwards of millions of dollars in research and development costs. The networking experience for students gives them the opportunity to make a lasting first impression on potential employers; some have walked away with an invitation to visit a potential employment opportunity with some of the sponsors.

http://mecapstone.gatech.edu/



Letter from the School Chair

Dear Capstone Design Expo Judges and Guests:

Georgia Tech opened its doors in 1888 with mechanical engineering being its only degree-granting program during the Institute's first eight years. Mechanical Engineering (ME) grew from the original shop or trade culture to a world professional curriculum with experimental laboratories and multi-disciplinary challenges. Today, with almost 3,000 students, the Woodruff School is the largest mechanical engineering program in the US, graduating over 600 bachelor's degrees, 200 master's degrees, and 65+ doctoral degrees each year. From its early beginning and throughout our history, one thing has always remained constant: excellence in creating and building products, devices, and systems that make the world a better place!

As part of our relentless drive for excellence, the Woodruff School embarked on an ambitious journey to create a renaissance in engineering education and make its undergraduate program among the very best in the world. Part of this initiative was to reintegrate and supercharge the "create-innovate-design-build" stem of the curriculum. The Woodruff School now encourages and enables all its students to engage in hardware prototyping for Capstone Design projects by providing a variety of resources, including access to state of the art machines, expertise, and assembly space to all its students, through the Georgia Tech Invention Studio, the Montgomery Machining Mall, the ME Electronics Shop, and the newly created IDEA Lab – all housed in a contiguous space on the second floor of the MRDC building. Some of these resources, like the Montgomery Machining Mall (MMM) which is a 6700sf professional state-of-the art yet student-friendly machining work space, are so unique that several other Georgia Tech academic units have signed service-level agreements to allow their students access to this state-of-the-art facility – creating economies of scale and increasing resources efficiency. Given these collaborations, it is not surprising that the Woodruff School also leads the drive for multi-disciplinary Capstone teams, and we can point with pride to strong partnerships with Industrial Design, Biomedical Engineering, and Electrical Engineering.

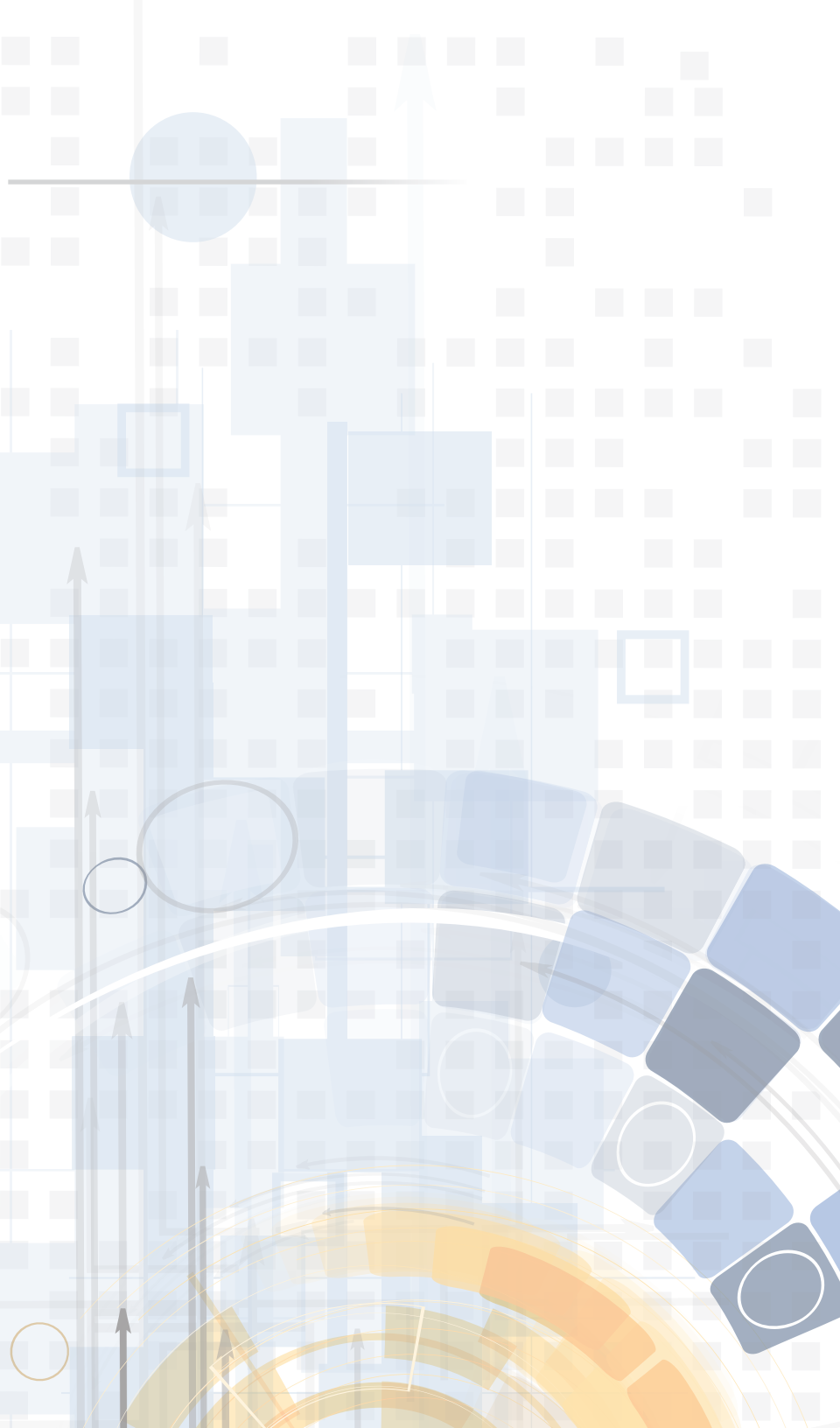
The Capstone Design Expo, which was started by Woodruff School over a decade ago, is now held twice per year and attracts several thousand attendees to Georgia Tech to evaluate and celebrate our students' accomplishments. The Spring 2018 Expo will have 226 teams from 12 different schools. Of those, ME has the largest number of teams (43) in addition to the 10 other interdisciplinary teams that have ME students. 75% of the teams have an external sponsor supporting their project. Eight teams are working on their own startups or new product/service ideas by entrepreneurs, and we expect this number to increase in future expos. Furthermore, one in four teams are focused on solving issues that impact environmental, energy or social sustainability in keeping with the Georgia Tech's Serve-Learn-Sustain initiative. One team is even working with a team of faculty and students in Saudi Arabia to design a novel heat exchanger system to leverage the excess environmental heat to generate energy and cool a net zero energy house – taking collaboration to a new international level!

Going forward we seek to build on our vision and proven record of accomplishment to advance engineering education and to significantly enhance the quality of our graduates as they enter the workforce. We thank you profoundly for joining us on this journey and your continuous support to educate mechanical engineering graduates who will have tremendous impact and provide positive change in our world. Come see for yourself and let me welcome you to the GT Capstone Design Expo!

Bert Bras

Brook Byers Professor

Interim Chair of the Woodruff School of Mechanical Engineering



Georgia Tech Mechanical Engineering

The George W. Woodruff School of Mechanical Engineering

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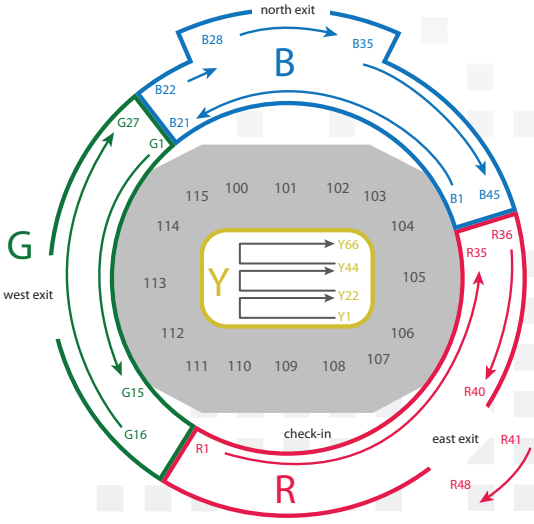
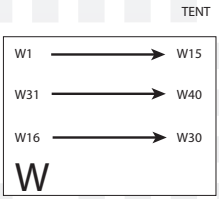
Expo Layout Map





Note for Prospective Sponsors

Capstone Design is a culminating course offered to all graduating seniors from the George W. Woodruff School of Mechanical Engineering. In this class, students work in multidisciplinary teams to design, build, and test solutions for real world applications. Students apply theoretical background in topics related to design, manufacturing, and business/entrepreneurial topics presented by experts in industry and academia. Their efforts are showcased at an end-of-semester Capstone Design Expo. More information about the course is available at http://www.mecapstone.gatech.edu/

Past industry sponsors have received innovative solutions to their challenging design problems, resulting in enormous cost savings and increasing profitability. Sponsors receive branding and visibility within the Georgia Tech Invention Studio, online course materials and at the Capstone Design Expo. For more information on how to submit your design project for the class, please contact Dr. Amit S. Jariwala. (amit.jariwala@gatech.edu; 404-894-3931).

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RED TAB - FRONT

RED TAB - BACK

In It for the Long Haul

R20

Long Haul Trucking Seat Redesign

AUTOMOTIVE

Sponsor
Autodesk

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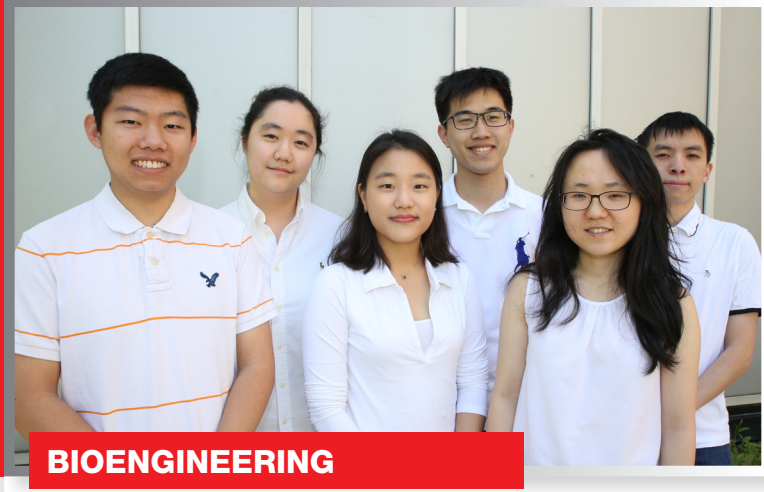
Our goal as a team is to redesign the existing seats in long-haul freight trucks using sensors and feedback to reduce fatigue and drowsiness over the course of long drives by implementing reactive and adaptive elements into the seat itself. The significance of this project, goes far beyond those directly interacting and distributing our seat; our seat has the potential to impact immediate road safety of the driver and neighboring cars, as well as overall driver health in the long-run.

R38

2^2^2

Shoe Shifter



BIOENGINEERING

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Ye Lim Lee	Seoul, South Korea
So-Yun Han	Marietta, GA
Jimin Park	Cupertino, CA
Derek Lee	New Hyde Park, NY

The goal of this project is split into three sections: shifting load off the forefoot and redistribution of forces, absorption of shock and impact, and returning energy. The proof of concept will be a product that is attachable to the shoe.

Geeky Blinders

Reach: Not Impossible

COMMUNITY DEVELOPMENT

Sponsor

SaraConnects, Not Impossible Labs

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Omar Raslan	Fayetteville, GA
Claire Miller	Kansas City, KS
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Matthew Derrico	Atlanta, GA

A rugged and universal basic cellphone amplifier to be used in low power conditions to make a single cellphone audible for up to 20 people. This is provided with a dial-in interactive radio service, which allows access to a variety of programs including news, entertainment, weather, immunization center inventory and much more.

R24

LifeBoat

Autonomous Boat Vaccine Delivery

COMMUNITY DEVELOPMENT

Sponsor

Not Impossible Labs

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Shane Kearney	Decatur, GA
Nicholas Johnson	Macon, GA
Sienna Creech	Edgewater, MD
Richard Purdy	Alpharetta, GA

We are designing an autonomous boat in order to help with “Last Mile” vaccine deliveries in third world countries. This could help to prevent hundreds of thousands of deaths due to preventable illnesses.

Design Works

Dispenser Mounting System

CONSUMER PRODUCTS

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The dispenser mount system is an intuitive, minimal damage system with modular capabilities. This system safely holds a 25-30 lb. device while accounting for significant out-of-planar and shear load.

R44

The Fast and the Furriest

Pup Crawler

CONSUMER PRODUCTS

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Bennett Humphries	Forsyth, GA

The pup crawler is a cart system to allow amputee dogs to get around. It is user friendly for both dog and owner.

Easy PZ

Piezoelectric Tile for NASA Kennedy Space Center

ENERGY

Sponsor
GTRI/NASA

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Ryan Morrissey	Richmond Hill, GA

NASA's Kennedy Space Center has contracted GTRI to develop piezoelectric tiles for visitor interaction and to show the potential for piezoelectricity application in the future. We have been tasked with enhancing the functionality of the piezoelectric triggering system as well as optimizing the assembly process to help deliver quality product to NASA in a timely manner.

R45

Pelagic Power

Offshore Current Turbine

ENERGY

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Evan Burdon	Orlando, FL
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We have designed a turbine system to convert offshore current energy into electrical energy. It will be modeled in a glass aquarium.

A-Migos

Device for Automated Selection of Transgenic Mosquitoes

MECHATRONICS

Sponsor

Centers for Disease Control

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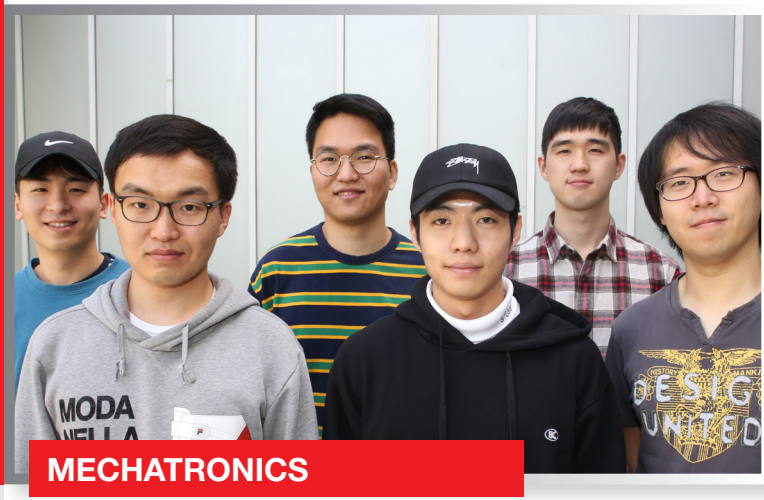
Swe Waine Htet	Yangon, Myanmar (Burma)
Emma Lee	Mandeville, LA
Jahin Ahmed	Nairobi, Kenya

The team is designing a sorting mechanism for transgenic mosquito larvae. The sorted larvae are genetically modified to produce male dominant offspring, which do not carry disease and do not bite, therefore are harmless to the environment. The goal is to reduce the spread of malaria by releasing these transgenic mosquitoes and eventually creating a male dominant population.

R3

ME Battleground

Design of a 2-Way Flow Meter for Fluids



MECHATRONICS

Sponsor
Tracklink

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Min Sik Choi	Bundang, Korea
Jae Min Yoon	Daejeon, Korea
Jin Sol Kim	Seoul, Korea
Hyo Kyoum Kim	South Korea

The purpose of this project is to design, build and test a sensor to measure the amount of mass flow of a liquid as it passes through a pipeline when milk is loaded onto a tanker. In addition, the sensor must deliver the data continuously to an AVL equipment (in a programmable time) using a serial port (RS232).

‘Squito Squad

A Device for Automated Selection of Transgenic Mosquitoes

MECHATRONICS

Sponsor
CDC/Imperial College London

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The purpose of this project is to aid in eradicating malaria from Africa, this device is compatible of accurately and quickly select transgenic individuals from a mixed transgenic and non-transgenic population. The desired throughput is 2000 transgenic larvae separated per hour in order for the labs to have a sufficient transgenic population to make an impact on the naturally occurring mosquito population in the area.

R48

Call Us Colobus

Arboreal Primate Feeder System

SUSTAINABILITY

Sponsor

Zoo Atlanta

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Shana Farkas	Hewlett, NY
Mathew Henning	Atlanta, GA
Courtney Allen	Atlanta, GA
Lael Gobble	Williamson, GA

Zoo Atlanta is seeking a new design to allow arboreal primates to be fed off of the ground. The goal of this project is to design, fabricate, and evaluate an arboreal primate feeder that can be operated by the zookeepers to deliver food, is safe for the animals, and that promotes natural feeding behaviors by offering a challenge to the animals in obtaining the food to mimic the challenges that exist in the wild.

Tech Laurel

Instant Hot Water

SUSTAINABILITY

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Millions of gallons of fresh water are wasted in conventional plumbing systems throughout the world. The project aims to design and implement a low cost, energy efficient attachment to existing plumbing systems that provides quick access to hot water; ultimately saving time, energy, and freshwater.

BLUE TAB - FRONT

BLUE TAB - BACK

HUDstrong

HUD for Delivery Systems

AUTOMOTIVE

Sponsor
General Motors

Advisors
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Isabelle Zhang	Johns Creek, GA
Rachel Collins	Savannah, GA
Kaie Westmaas	Marietta, GA
Sungwoo Ryoo	Atlanta, GA

We are designing a Heads Up Display, specifically for semi to fully automated delivery vehicles. The main goal is to increase the safety of the driver while increasing the efficiency of the drivers.

B24

In&Out

Ingress/Egress of Level 4 Autonomous Vehicle

AUTOMOTIVE

Sponsor

General Motors

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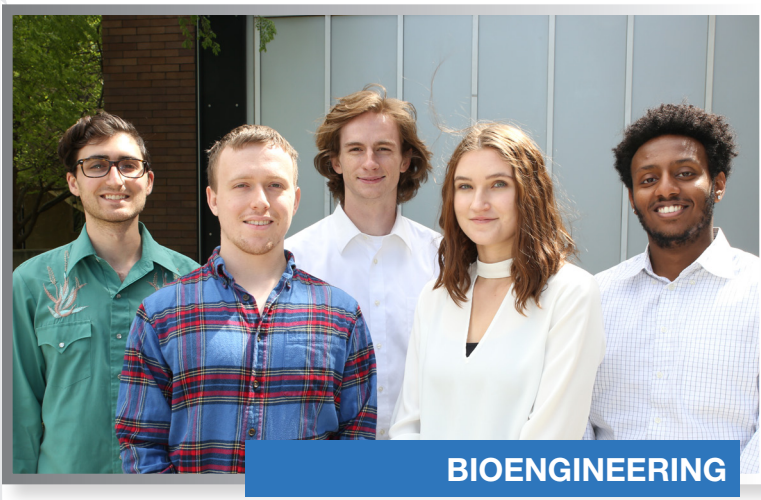
Sujin Jung	Atlanta, GA
Jonathan Mickels	Atlanta, GA
Daniela Marzolini	Boca Raton, FL

The overall objective is to design an enhanced ingress and egress experience for a level 4 autonomous fleet vehicle. The main components consist of exterior design of the vehicle, door mechanism, lift mechanism for disabled riders, and interior floor/seating layout.

Interactive Opera

Interactive Opera Costume and Set Design



BIOENGINEERING

Sponsor
Arts @ Tech & Capitol City Opera

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Andrew Stolorena	Lilburn, GA
Michael` Sarris	Alpharetta, GA
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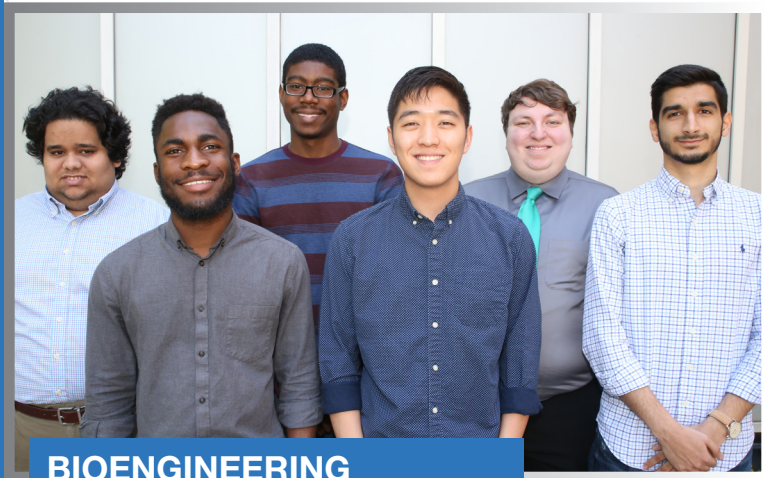
To create an interactive theater piece or costume for the Capitol City Opera showing of Don Giovanni. Where interaction can be between the audience, actors, and/or set.

B40

R.A.T. Cap

Robotic Stroke Upper Limb Rehabilitation



BIOENGINEERING

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Chase Dyer	Georgetown

Our team seeks to design an in-home device to aid in the rehabilitation of upper limbs for moderate to mild stroke patients. The device consists of a robotic end-effector platform for usage of repetitive task training exercises. The device allows for the patient to exercise in both resistive and assistive modes.

Team S.C.O.R.E.

Electrochemical Nitrogen Fixation Device

COMMUNITY DEVELOPMENT

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Will Campiglia	Valdosta, GA
Charles Xiao	Duluth, GA
Savannah Morgan	Charlotte, NC

Our device is an electrolyzer that utilizes fuel cell architecture to produce ammonia from nitrogen. Ammonia is a key ingredient in fertilizer, and the goal of this device is to enable low cost ammonia production, bringing nutrition to the developing world.

B22

Florey

Massage T-Shirt

CONSUMER PRODUCTS

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HanesBrands, Inc.

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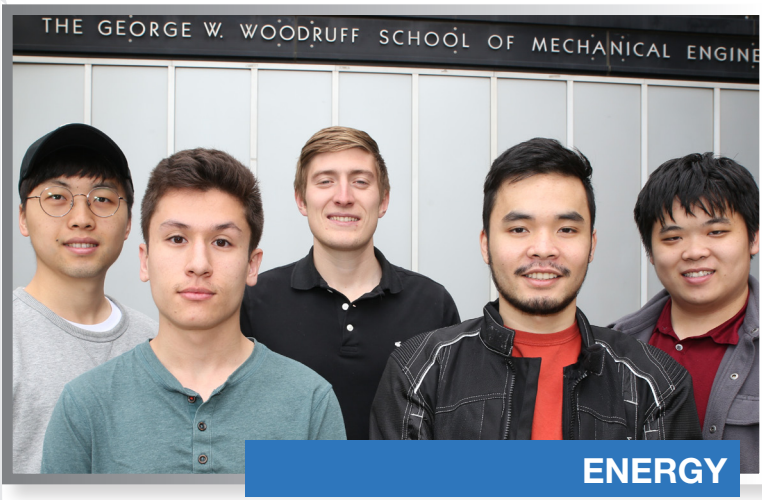
Florey Fung	Lawrenceville, GA
Joseph Calicchio	Houston, TX

T-Shirt with built in therapeutic benefits including massage and hot/cold treatment for sore muscles. Incorporates flexible batteries, thermoelectric chips, and woven wiring to provide an effective but lightweight solution.

ME Warriors

Flexible Heat Engine



ENERGY

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Members

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Benjamin Ong	Peachtree Corners, GA
Minh Hoang	Ho Chi Minh, Vietnam
Ryan O'Connell	Newnan, GA

This team is developing a flexible heat engine capable of converting heat into pumping. The engine uses a simple fluid like water as a piston, and it can be applied to multiple low-grade heat sources like waste heat to generate pumping.

B29

Orchard

Design a Hydroponics Development Kit

ENTREPRENURIAL

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Andres Menendez	Bethesda, MD
Tyler Barnwell	Warner Robins, GA
Joshua Kim	Atlanta, GA

The DIY community has exploded in recent decades, however the hydroponics space is built on duct tape and PVC pipe. We have created a powerful hydroponics dev-kit, enabling anyone to forge an in-home urban farm.

Sunny Smiles

All-in-One Oral Care Device

ENTREPRENURIAL

Sponsor
Williams and Wright

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Armaan Velji	Atlanta, GA
Kyoung Chan Kwak	Montgomery, AL
Cameron Cintron	Washington, DC
Nikita Peker	Mckinney, TX
Sayyaf Ali	Atlanta, GA

The project is to design a product that integrates crucial oral care functions i.e. brushing and flossing into one device to make oral care easier and more convenient for users. The solution contains 30 days worth of toothpaste and floss and is refillable with the users choice of toothpaste, and cartridges of 30 floss refills.

B27

Wizards of Woodruf Place

Flying Broom VR Simulator

ENTREPRENURIAL

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FanaticusXR

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Tom Mezaros	Freehold, NJ
Ayesha Asif	Bowie, MD
Austin Glass	Raleigh, NC
Lance Lu	Sylvania, OH

We are working with FanaticusXR to build a mechanical simulator that recreates the feeling of riding a flying broomstick in a virtual environment. Our project links physical simulation with a virtual reality set up so the rider can have a new immersive experience.

Get Waisted

3D Printing Garments

MANUFACTURING

Sponsor
HanesBrands, Inc.

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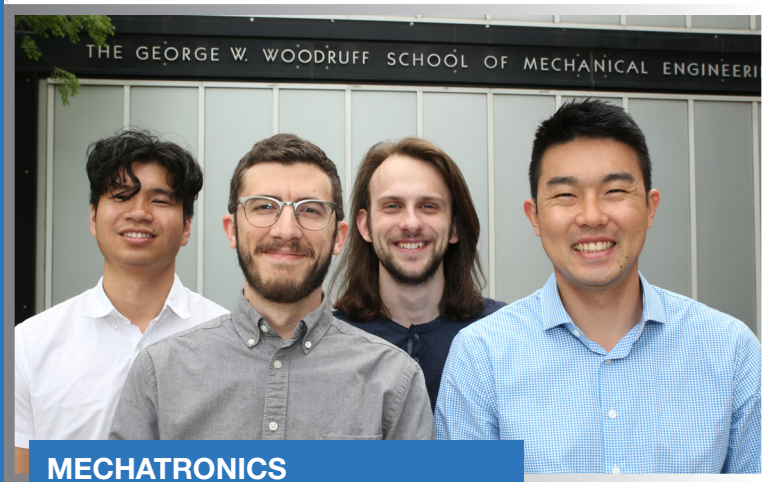
Austin Pelfrey	Atlanta, GA
Vivian Eng	Brunei
Marissa Power	Tullahoma, TN

The goal of the project is to 3D print garments intended to be worn for everyday use. The team decided to print body shapewear for women to use under their everyday clothing.

B7

GT-MuRad

Muon Radiography Rolling Inspection System (M.o.R.R.I.S.)



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Design and build a rover with the ability to crawl along the exterior of a pipe. Rover will be fitted with sponsors experimental muon detectors with unique design constraints.

The 6 Megos

Smart Oil Level Sensor

MECHATRONICS

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Laura Segura	Weston, FL

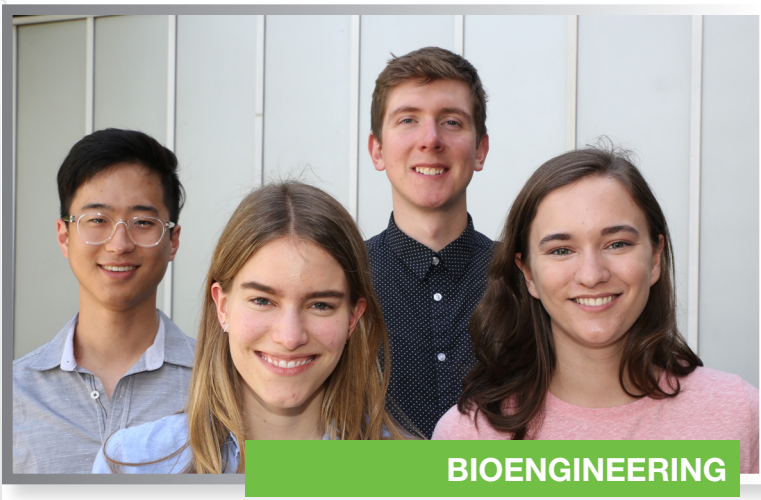
Due to an OSHA regulation requiring industries to supply fall protection for technicians working on surfaces higher than 4 feet, a new method of oil level sensing is needed for airline ground support equipment (GSE) whose engines are taller than 4 feet. Our team is designing a device that can measure the oil levels of GSE engines and relay the information to the operators via dashboard alerts and to the engineers and technicians via a mobile app, this solution will eliminate the need for technicians to climb GSE vehicles to check oil levels. By connecting vehicle oil levels to a central command center, we enable the opportunity for airlines to optimize their technicians' maintenance schedules and prevent future damage to their vehicles.

GREEN TAB - FRONT

GREEN TAB - BACK

Brace Yourself!

Design of Interactive Scoliosis Brace Monitoring System



BIOENGINEERING

Sponsor

Children's Healthcare of Atlanta

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Our group designed a real-time interactive brace monitoring system for Children's Healthcare of Atlanta. Our system monitors the brace usage of children with scoliosis and improves the overall compliance with brace usage. The system also interacts with the parents and orthotist of the patient, sending feedback to them regarding brace usage.

G5

Hatstone

Think Tank

ENERGY

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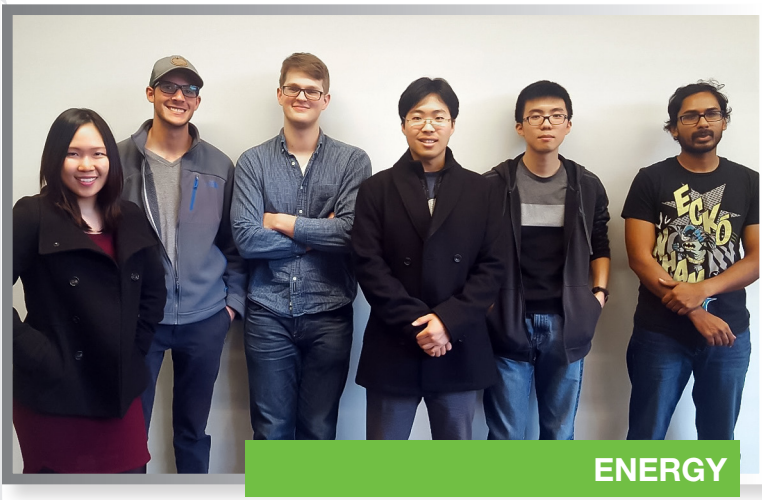
Wenyue Wang	Zhengzhou, China
Jinyoung Ro	Seoul, South Korea
Oladipupo Johnson	Lagos, Nigeria

Design a Pump Motor and Drive mechanism to transfer torque from a unique high torque motor with low RPM. The solution should be cost effective with high reliability.

Team Energeasy

Hydronic Energy Transfer System



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Create a more efficient water heater. We are focusing on the coil design and on COMSOL software analysis.

G2

Lapdogs

Laptop Theft Deterrent

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Max Toothman	Kennesaw, GA
Sydney Weiss	Weston, CT
Peter Shoemaker	Atlanta, GA

We are designing a security device to prevent the theft of unattended laptops. This device is adjustable to most laptop sizes, and physically attaches to the back of the screen. Using a motion sensor, this device will sound an alarm if disturbed by an unauthorized person.

The Braject

Fixing Underwire Breakage in Bras

MANUFACTURING

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The underwire is a piece of metal used to support women's breast. In HanesBrands products, the wire can be bent out of shape after a length of time or due to improper washing techniques. Our project is addressing that breakage, as well as the wire poking through the fabric of the bra.

YELLOW TAB - FRONT

YELLOW TAB - BACK

Team On Pointe

Ballet Pointe Shoe Redesign

BIOENGINEERING

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The objective of this project is to redesign the pointe shoe for professional ballerinas to increase the functionality and performance of the shoe by improving overall fit and thereby reducing pain and pressure on the foot and prolonging shoe longevity.

Y24

Claybourne Industries

Stick'n Plug

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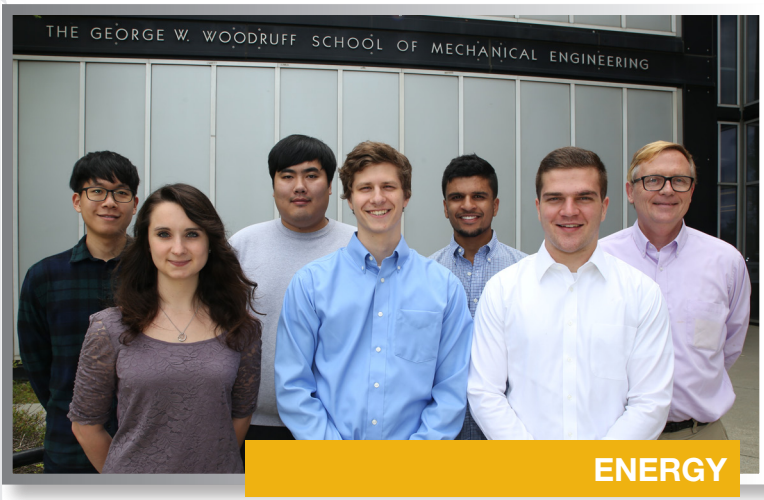
The objective of this project is to develop a fast, easy, multi-surface mounting solution for towel, tissue and skin-care dispensers in public washrooms. The mount must not damage wall surfaces and is easily removable.

Red Pony

Design of a Net-Zero Energy Home



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Jacob Thiemannn	North Palm Beach, FL

Design a net-zero energy home for use in Saudi Arabia that is grid independent.

Y40

Built to Brew

Home Brewing System

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Miles Bowen	Peachtree City, GA
Jahvan Innerarity	Conyers, GA
Conner Owen	Senoia, GA

We are designing an all in one home brewing system. The design aims to provide consistency, automated control, and adaptability through modularity.

Rollin' a Hard Six

Design of Automated Toothbrush for a Fast and Efficient Clean

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This is an electrically driven toothbrush that is designed to brush all of your teeth simultaneously, effectively lowering the time required to brush from 2 minutes to 15-30 seconds.

Y41

Mischief Manage

Electronics Encapsulation for Smart Gloves

MANUFACTURING

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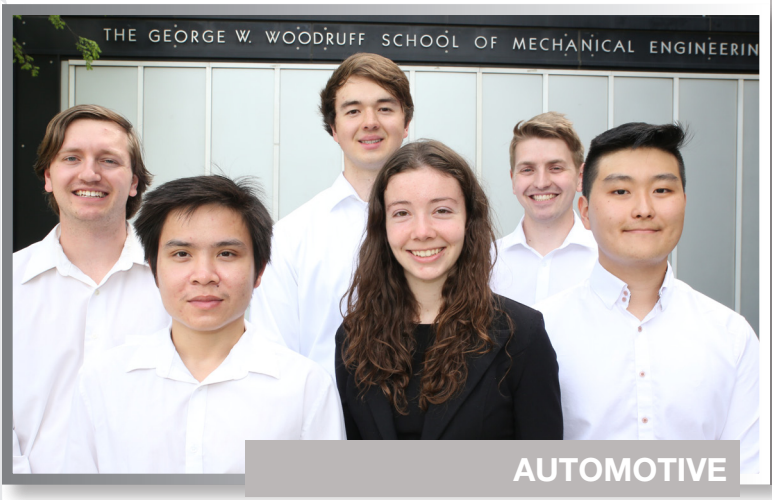
The purpose of this project is to design and build a new set of encapsulation package (such as using molding, 3D printing, or any other methods) to incorporate the antenna and electronics board components on different carrying formats (gloves as the first example),and test the electrical, mechanical and environmental reliabilities of the whole smart system.

WHITE TAB - FRONT

WHITE TAB - BACK

No Sleep, No Brakes

Brake Pad Coefficient of Friction Analyzer



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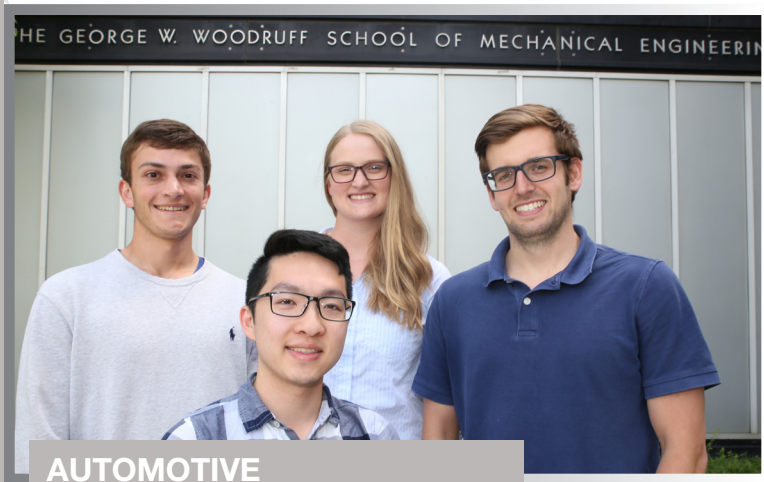
Elliott Blocha	Pine Lake, GA
Khai Le	Savannah, GA

The proposed brake pad analyzer will determine the coefficient of friction value for cold pads. The product will be easy to transport, reusable, and the data acquisition process will be automated and take less than 45 seconds to complete.

W19

We Drink and We Know Things

Ford Solar Canopy



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Eric Alana	Wimberley, TX

Design and build a portable structure to hold a solar panel array for a Ford F-150 pickup truck for use in off-the-grid applications.

Winging It

FSAE Aerodynamics Package

AUTOMOTIVE

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GT Motorsports

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Joy Zhang	Johns Creek, GA

The Georgia Tech Motorsports Team designs and builds a racecar to compete in the Formula Society of Automotive Engineers (FSAE) competition every year. The goal of this project is to design a wing structure that is able to withstand the expected loads, remain lightweight, and is manufacturable by the Georgia Tech Motorsports Team.

W20

YES WE CANopy

Solar Canopy

AUTOMOTIVE

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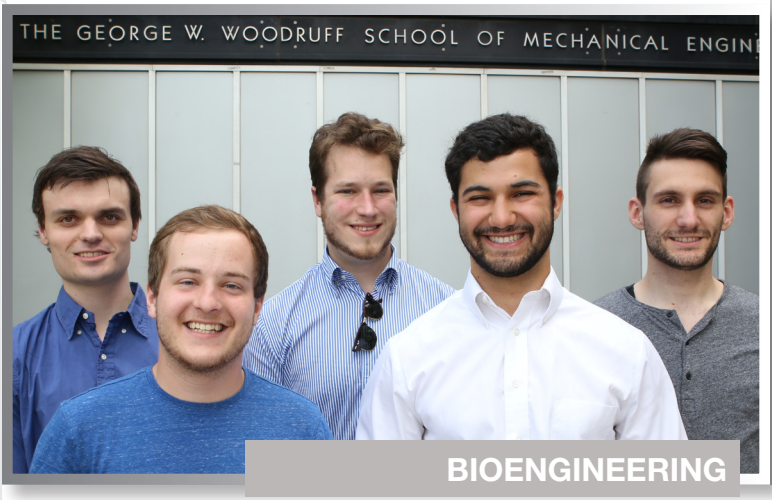
Joseph Lakofka	Lexington, KY
Madison Evans	Roswell, GA
Rachel Steppe	Woodstock, GA
John O'Keefe	North Potomac, MD

Based on the need for a portable power source, we have been tasked with designing a canopy capable of harnessing solar power. The canopy can be used in a variety of situations from tailgating events to emergency vehicle charging.

Walk More

Motorized Ankle Prosthesis



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Bradley Smith	Sandersville, GA

Our project is a trans-tibial motorized ankle prosthetic. The focus of our innovation is increasing the number of steps the user can take on one charge of battery, this will be done using energy recapture mechanisms.

W4

Humana-T

Microbial Compost Management System

COMMUNITY DEVELOPMENT

Sponsor

Atlanta Food & Farm, PBC & Serve Learn Sustain

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Ashley Bahrenburg	Sugar Hill, GA
Natalie Murray	Lawrenceville, GA

Our project's aim is to develop a device to make the composting process easier for urban farmers. To accomplish this, the device must monitor their compost pile for them, remove the manual labor required to maintain a compost pile, and eliminate perceived ills regarding compost while maintaining the quality of the compost.

Señor Design

AKIVA Repellent Delivery/Application Innovation

COMMUNITY DEVELOPMENT

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Spencer Tyson	Chanhassen, MN
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Sommy Khalaj	Atlanta, GA
Robert Griffith	Augusta, GA

We are developing an affordable and effective application method for LivFul's mosquito repellent, AKIVA, that will help reduce repellent waste and increase cost efficiency.

W36

Smooth Sailing

Load Sensing Turnbuckle with Electronic Display

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John Boehling	Tampa, FL
Ethan Wescoat	Houston, TX
Conner Killham	Pasadena, MD

We are designing a load sensing turnbuckle that can be installed on a sailboat to monitor the multiple wire stays that support the mast. The data collected by these sensors would be transmitted to a user interface, and can be used to adjust the tuning and performance of the boat.

Thread-It!

Thermal Modulation Fabrics: Weaving Phase Change Fibers into Textiles

ENERGY

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Mr. and Mrs. Dr. Realff

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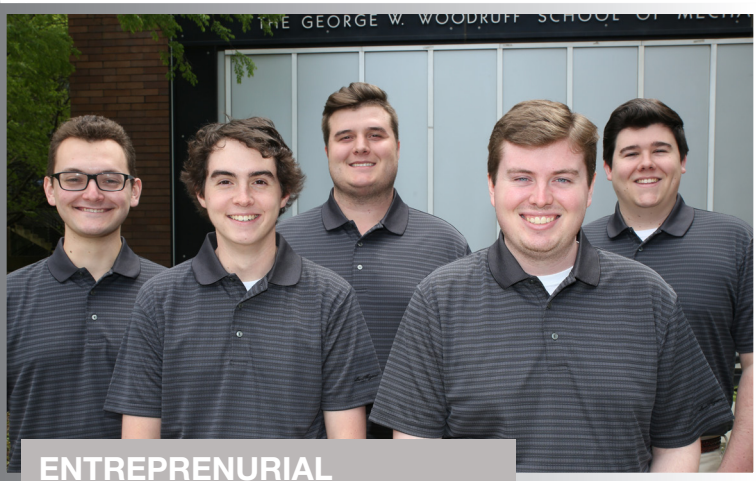
Jeffrey Chang	Berkeley Lake, GA
Garrett Cashwell	LaGrange, GA
Quinn Witsken	Atlanta, GA

Our project is to utilize patented ePCM Fibers in a woven design that can be used in residential, commercial, and industrial buildings to save energy and mitigate drastic thermal changes in buildings. We are asked to test and choose the best Fiber batch based on diameter and percent PCM by volume, weave them, and apply them to testing rig to simulate a large scale room with radiative heat energy entering the room.

W32

Jellow Yackets

Swingless Golf Club



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Daniel Dufresne	Southport, NC
Stephen Leonard	Saratoga Springs, NY
Mitchell Torbert	Columbus, GA

Our project is a golf club that can hit the ball without the person playing having to swing the club. This allows for older people as well as disabled people to have the ability to enjoy a round of golf.

Blue Sky Solutions

Off-Road Navigation System

MANUFACTURING

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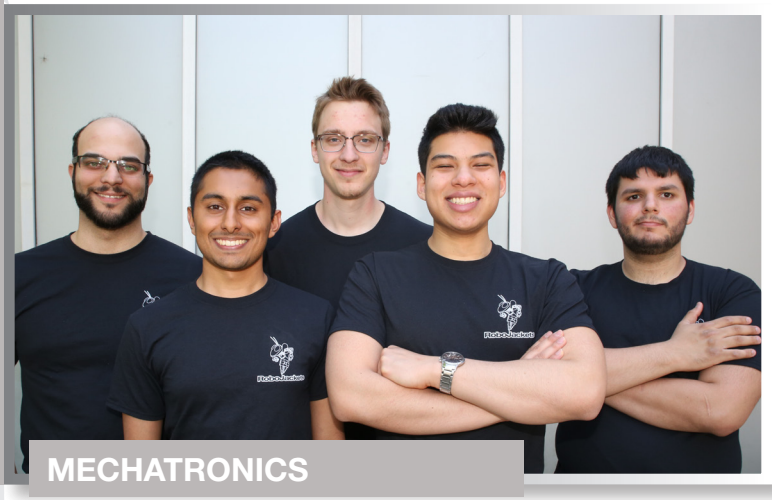
Rachel Beyersdorfer	Belleville, IL
Aemah Badri	Atlanta, GA
Shira Braiterman	Wolfeboro, NH

We have been tasked by Textron Specialized Vehicles with designing a camera system with a 360° view for off-road Utility Task Vehicles (UTVs). The purpose of this camera system is to take the place of a human "spotter" whose job it is to scout the terrain while a UTV driver is navigating difficult obstacles during the sport of rock crawling. The camera system will allow a driver to go rock crawling without the need for a spotter, as they will be able to see the details of the terrain immediately surrounding the vehicle.

W1

Finding Robot Red October

Swimming Swarm



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The goal of this project is to create a standard AUV platform for developing underwater swarm robotics. Currently, there is a need to utilize swarm technology to perform difficult tasks a single robot cannot do underwater. Existing AUVs are large, inexpensive, and incapable of holding various sensors to enable autonomy. The scope of this project is to design the main chassis and implement sufficient propulsion and sensor housing such that the AUV is capable of underwater locomotion through open loop control.

K2

C04 – Design of a Universal Relative Weighing System (Yyogy)

MECHATRONICS

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TrackLink

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Bilal Ali	Savannah, GA
Aman More	Mumbai, India
Angie Zhang	Los Angeles, CA
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The design problem is figuring out a way to collect an accurate weight and be able to send it with latitude and longitude location through an Automatic Vehicle Locator (AVL). Tracklink has asked that we create a system that is noninvasive, easy to install, universal for all suspension types, reading a range from two to thirty-two tons, and hooked up to their system using RS232 port.

W31

Space Cadets

CARGOS

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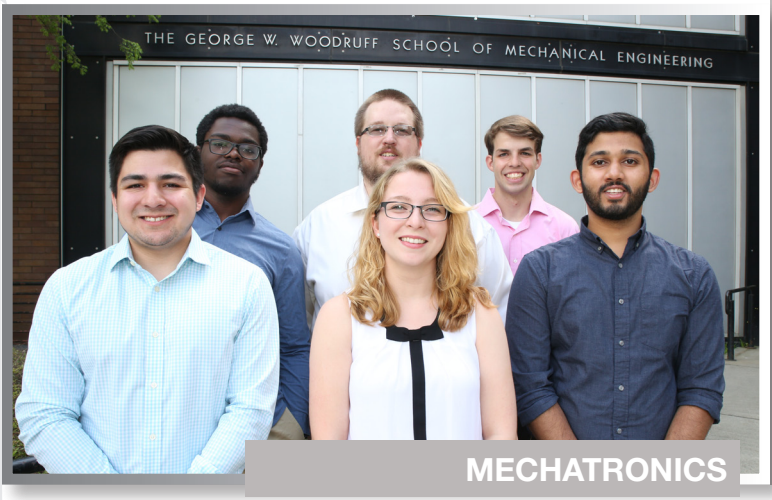
The Compact Active Response Gravity Offload System (CARGOS) simulates reduced/zero gravity for tools being used for astronaut training amongst other applications. The new system will replace NASA's current passive offloader.

TECHnically Challenged

Swimming Swarm



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Development of mechanical systems and housing for an interconnected swarm of autonomous underwater vehicles (AUV's).

W35

Buttoneers

Buttons Be Gone

SUSTAINABILITY

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Celestial Theory

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Our project removes non-fibrous materials from clothing (buttons, zippers, grommets, etc.) and then sorts them from the fibrous materials. The only required output is the fibers in any form ready to be melted.

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