Title: Hybrid Wind Turbine

Project Code: Agarwal_01

Project Objectives

- This is a continuing project from the previous years. The prototype is almost complete, CAD drawings and some functional and strength analyses have been done. The objective of the project for Fall 2020 and Spring 2021 is to:
    - Verify the previous work and complete a CAD model for analysis
    - Conduct analysis to estimate the energy generation with solar power alone
    - Conduct analysis to estimate the energy generation with Turbine without the solar power
    - Conduct analysis to estimate the energy generation with solar power and the wind turbine combined as done in the last version of the prototype.
    - Optimize the energy generation using each mode.
    - Determine which option is better and how to optimize the modeled wind turbine

Project Scope

- Create and optimized an analytical model of a hybrid wind turbine

Project Deliverables

- CAD model of the wind turbine with a solar panel
- Energy analyses of wind turbine: i) without solar panel, ii) with solar pane
- Optimized model of the wind turbine and the solar panel

Project Sponsor

- Dr. Baldev Krishan

Number of Student Spots

- 4-7

Project Graphic

(without the solar panel)

Prospective Projects for ME 195 A - Dr. Agarwal's section
Fall 2020

Any lab development, work-sponsored, or project of students' interest.

- **Formula SAE**
- **Renewable Energy**
- **Two- and four-wheel vehicles**
- **Consumer products**
- **Etc.**

1. Spartan Superway 10 m Scale Model Guideway

Project Code: Furman_01

Design an intelligent, passive, and functioning guideway that will allow full operation of bogies on the model. The guideway is not just a simple structure for the bogies to move on, rather it is part of a complete physical and electronic framework that integrates sensing and the communications that oversees operation of the model. Project work will be done in conjunction with the Bogie teams and the Remote Control and Monitoring team.

Project Objectives

- Design an intelligent guideway for a working Scale model of the Superway transportation system
    - Implements a robust and passive switch for 'Y'-junctions on the guideway
    - Includes a simulated off-line station (inner loop) with wayside charging scheme
    - Functions in conjunction with the bogie and its switching mechanism
        - Contains a simple yet effective way for the bogie to determine its distance from the track switch
    - Enables awareness using sensors to:
        - Provide location and motion feedback to bogies and the control station
        - Monitor its own health (self-diagnosis)
    - Incorporates precision in manufacturing the components of the system
    - Permits interchangeability of parts instead of bespoke assembly
        - Parts of track can be rearranged into alternate configurations

Project Scope

- Spartan Superway Design Center model covering approximately 43 ft. x 27 ft.

Project Deliverables

- Complete guideway structure that integrates with mobile bogies to be designed by the Bogie Team
- Thorough Finite Element Analysis conducted on components with relevant data needed for documentation
- Detailed and organized report at the end of each semester
- Solid models and drawings of components and assemblies using SolidWorks software
- Test plans/schedule
    - Complete plans for functional testing, including Gantt Chart schedules
    - Full documentation of tests and results

- Cost analysis and detailed drawings for each component performed using SolidWorks for manufacturing purposes
- Full documentation of project work
  - Follows the organization system provided by the project directors and mentors
- Control electronics, schematic diagrams
  - Proper documentation of sensors and electronic layouts

Project Sponsor

- Spartan Superway

Number of Students

- 3-5 team members

Project Graphic

Figure 1. 10-meter track under construction Aug. 2020

2. Spartan Superway Bogie Chassis Design

Project Code: Furman_02

Design a bogie that incorporates switching, sensing, and wayside power pickup that will move on the 10 m scale guideway and can serve as template for further development. Project work will be done in conjunction with the bogie switch arm team, the solar power team, and the remote control and monitoring team.

Project Objectives

- Develop a lightweight bogie chassis that is functional on the 10 m scale model guideway
    - Designed parts maintain a factor of safety of 2 or more
    - Chassis must incorporate sensors, power systems, and suspension components
        - *Sensors* - Utilize sensors to monitor abnormalities internally and externally
        - *Power Systems* - Attaches and houses batteries, motor drive, wayside power, and control system electronics
        - *Suspension* - Includes lateral suspension to mitigate effects of dynamic forces when wheels turn and accelerate

Project Scope

- Spartan Superway 10-meter bogie (CAD will be provided)
- Must function on the existing model guideway

Project Deliverables

- Functional bogie chassis that incorporates track switching mechanism and integrates sensors, power systems, and lateral suspension
- Thorough Finite Element Analysis conducted on components with relevant data needed for documentation
- Solid models and drawings of components and assemblies using SolidWorks software
    - Cost analysis and detailed drawings for each component performed using SolidWorks for manufacturing purposes
- Test plans/schedule
    - Complete plans for functional testing, including Gantt Chart schedules
    - Full documentation of tests and results
- Full documentation of project work
    - Follows the organization system provided by the project directors and mentors

Project Sponsor

- Spartan Superway

Number of Students

- 8-10 team members

Project Graphic

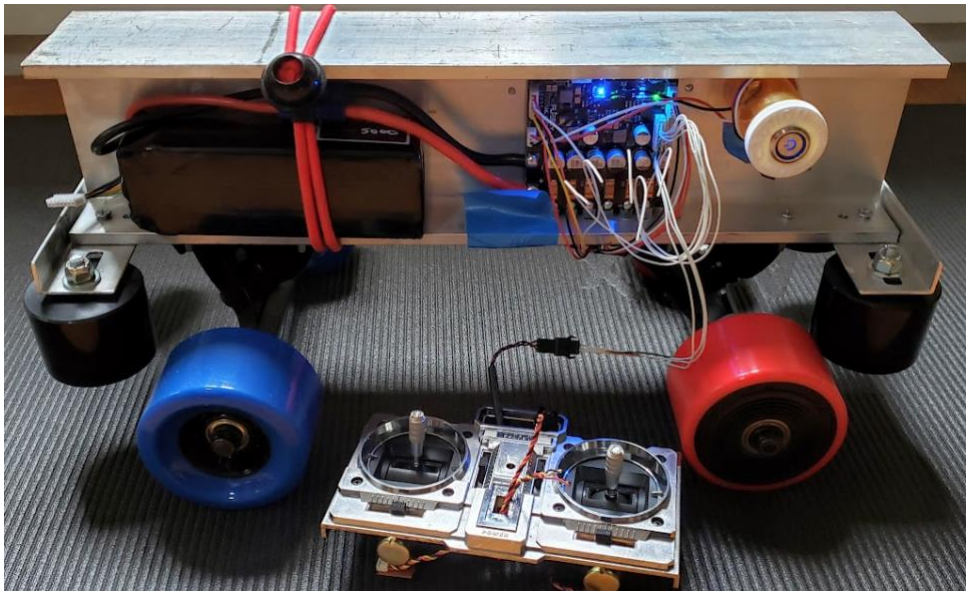


Figure 2. Bogie prototype showing I-beam chassis and propulsion system

3. Spartan Superway Bogie Switch Arm Design

Project Code: Furman_03

Design a way for the bogie on the 10 m scale guideway to reliably switch from one guideway path to another at a merge or diverge intersection. The design team will work in conjunction with the Bogie Chassis team and the Scale Model Guideway Team to design the switching solution.

Project Objectives

- Design and manufacture a mechanism, integrated on the bogie, that will enable it to reliably follow a commanded path through an intersection on the guideway
    - Robust, failsafe design
- Switching mechanism is activated by an onboard controller which operates on sensor data and program to control to set the switch prior to entry into the intersection
- Design incorporates all the mechatronics needed for executing switching behavior

Project Scope

- Spartan Superway bogie chassis (volume envelope is TBD)

Project Deliverables

- Complete mechatronic design that can be incorporated into bogies operating on the 10 m scale model
- Thorough Finite Element Analysis conducted on components with relevant data needed for documentation
- Solid models and drawings of components and assemblies using SolidWorks software
- Test plans/schedule
    - Complete plans for functional testing, including Gantt Chart schedules
    - Full documentation of tests and results
- Cost analysis and detailed drawings for each component performed using SolidWorks for manufacturing purposes
- Full documentation of project work
    - Follows the organization system provided by the project directors and mentors
- Control electronics, schematic diagrams
    - Proper documentation of sensors and electronic layouts
- Detailed and organized report at the end of each semester

Project Sponsor

- Spartan Superway

Number of Students

- 2-4 team members

4. Spartan Superway 10 m Scale Model Solar Power System

Project Code: Furman_04

A renewable power system and power management approach to deliver solar power to the 10 m scale model is needed. This team will work in conjunction with the Scale Model Guideway team and the Bogie Chassis team to deliver a functioning solar power system for the Scale Model Guideway.

Project Objectives

- Design **a renewable power management system** using photovoltaic panels to energize the 10 m scale model guideway and allow bogies to charge themselves
    - Develop a power budget for 10-meter track and bogie system
    - Research and identify best practices of existing solar power management systems
    - Design approach to be scalable
- Incorporate supercapacitors and batteries into the energy storage system that mounts on the bogie
- Integrate the power management solution into the 10 m scale model, so that a bogie can recharge itself on the guideway

Project Scope

- Spartan Superway Power Management for the 10 m scale model

Project Deliverables

- Complete schematics of the power management system
- Calculations and sizing of associated components, wiring, and sensor
- Solar panel placement, charge control, and wiring per industry standards to provide power to the 10 m scale model
- Integrated sensor and software that can be used by the Remote Monitoring team to provide real-time data on relevant system state variables
- Test plans/schedule
    - Complete plans for functional testing, including Gantt Chart schedules
    - Full documentation of tests and results
- Cost analysis and detailed drawings for each component in the system
- Full documentation of project work

Project Sponsor

- Spartan Superway

Number of Students

- 3-5 team members

5. Spartan Superway 10 m Scale Model Remote Monitoring and Control

Project Code: Furman_05

Operation, monitoring, and control of the 10 m scale model via a web interface is needed. This team must work together with the Bogie teams, the Guideway team, and the Power System team to be successful.

Project Objectives

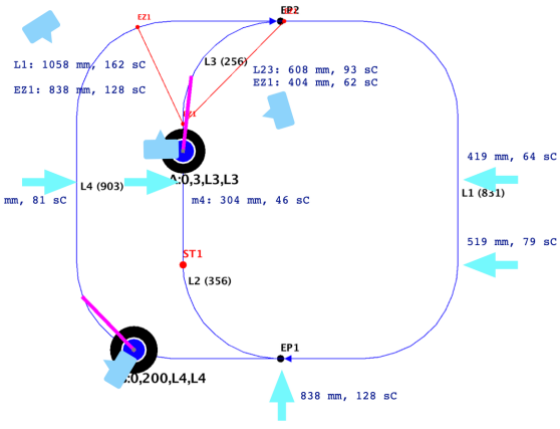
- Web and/or mobile-based monitoring 'dashboard' for the 10 m scale model that will display in real time important system variables, such as:
    - Position of all bogies on the guideway
    - Velocity of all bogies on the guideway
    - Energy/power usage
    - Noise/vibration
    - Video of the entire guideway and bogies
    - Health/integrity/abnormality of the guideway
    - Status/health/performance of a bogie
- Dashboard allows a control mode so that at least two bogies can be controlled remotely by a web and/or mobile interface

Project Scope

- Spartan Superway 10 m scale model
- Web/mobile dashboard display for real time display of key metrics

Project Deliverables

- Functional web/mobile dashboard that displays key system performance metrics
- Test plans/schedule
    - Complete plans for functional testing, including Gantt Chart schedules
    - Full documentation of tests and results
- Full documentation of project work
    - Follows the organization system provided by the project directors and mentors



Project Sponsor

- Spartan Superway

Number of Students

- 2-5 team members

Project Graphic

Total Knee Replacement Wear Testing Device

Code: Yee_01

Develop a device to test the wear on a polyethylene insert used in knee replacement surgery

- Based on Gait Cycles from ISO 14243
- Operate at ~1 Hz ± 0.1 Hz
- Fluid bath with Calf serum (25% diluted) at 37 °C ± 2 °C
- Force profile within ± 3% and Flexion angle profile within ± 5%
- Inexpensive testing device

students: 5

SAN JOSÉ STATE UNIVERSITY

Collapsible Cup Design for Hot/Cold drink Code: Yee_02

Design and produce a collapsible cup that promotes sustainability and easy access for a consumer

- Design specifications:
  - Capable of containing at least 12 oz fluid
  - Capable of holding the fluid's original temperature within 20 degrees C range for two hours.
  - Leak-proof
  - Capable of being compacted and expanded for a mobile design
  - Satisfies health standards and regulations for consumption usage.

students: 4

Enclosed Avocado Cutter Design Code: Yee_03

Design a fully enclosed avocado cutter with pit removal capability.

Design Specifications:

- Fully enclosed an avocado and lightweight
- Easy to use
- Safe operation
- Aesthetic appearance
- Accommodate any avocado size
- Inexpensive
- Either manual or automatic control

students: 4

Title: Personal Device Accommodations in Rideshare Vehicles

Project Code: Yee_04

Project Objectives

- Design and create a prototype, seat or interior feature to accommodate personal device (phone, laptop, tablet, etc) usage in rideshare vehicles
    - Integrates into provided, existing seat or interior structures
    - Meets Ford internal standards and requirements for quality and wear
        - Verified through CAE
    - Provides improved user satisfaction compared to current interior, proven through customer clinic/survey

Project Scope

- Feature for accommodation of one type of personal device in a provided, existing vehicle interior inclusive of seats

Project Deliverables

- Functioning hardware, including
    - Feature integrated into seat or interior as applicable
    - solid models and drawings of components and assemblies
    - control electronics, schematic diagrams (if applicable)
- Test plans
    - CAE
    - Customer Clinic
- Test results
    - CAE
    - Customer Clinic
- Full documentation of project work

Project Sponsor

- Ford Motor Company

Number of Student Spots

-

Project Graphic

Source: Van Veen et. al 2012

Title: Additively Manufactured Compliant Mechanism Design (Sponsored by Ford)

Project Code: Viswanathan_01

Project Objectives

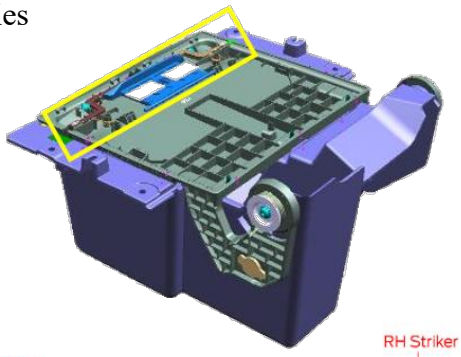
- Deliver a cost effective monolithic (single-part) additively manufactured compliant mechanism for the Ford Explorer media bin which meets all Ford engineering & design requirements. Specifics include:
    - Incorporates precision and repeatability in designing for additive manufacturing
    - Meeting the primary mechanism target of force-deflection
    - Must satisfy the Ford design guidelines
    - Satisfy the Ford durability requirements for both cycle-life/fatigue & thermal
    - Demonstrate CAE that accurately captures the mechanism performance
    - Develop a business case for implementation, 3D Print build scene, and determine cross-over volume against conventional injection molded solution

Project Scope

- Ford Explorer Media Bin Mechanism: 60 mm x 200 mm

Project Deliverables

- Functioning mechanism meeting all requirements
- Business case & sensitivity analysis for A.M. implementation
- 3D Print build box packing scenario
- Solid models and drawings of components and assemblies
- Experimental test data for durability & thermal
- Additional test plans & results ; CAE validation
- full documentation of project work



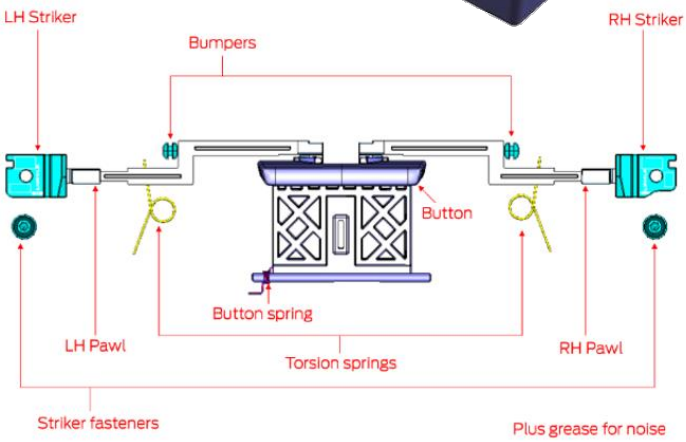
Project Sponsor

- Ford Motor Company – Greenfield Labs

Number of Student Spots

- TBD

Project Graphic (optional)



Title: Complete Redesign of a Complex System in a Ford Vehicle

Project Code: Viswanathan_02

Project Objectives

- The team will work on a complex system - Instrument Panel - and design it based on Ford's requirements and design rules.
- The Ford team will provide technical guidance on general engineering practices while allowing the SJSU team to be free to explore different concepts and experiences surrounding that system.
- Overall, designing a system from scratch is a challenging, but fun and rewarding experience and could fast track the students' skills as automotive engineer

Project Scope

- Redesign of a Ford system- possibly work with an EE senior design team

Project Deliverables

- TBD

Project Sponsor

- Ford Research

Number of Student Spots

- 04

Title: Rehabilitation System Design for the Physically Challenged

Project Code: Viswanathan_03

Project Objectives

- Collaborate with two teams – one from CalState at Fullerton and another one from Calstate at Long Beach to develop a complex rehabilitation system (e.g., a wheel chair with rehabilitation equipment)

Project Scope

- Design of a rehabilitation system – more details will be available from the instructor

Project Deliverables

- TBD

Project Sponsor

- Dr. Viswanathan

Number of Student Spots

- 04 - 05

Title: Projects on Spartan Hyperloop

Project Code: Viswanathan_04

Project Objectives

- Multiple projects available – details and specific objectives will be available shortly.

Project Scope

- TBD

Project Deliverables

- TBD

Project Sponsor

- Spartan Hyperloop Club

Number of Student Spots

- 04 per team (likely 3 projects)

Project details for ME195a
Offered by Dr. S.H. Zaidi
(Mechanical Engineering Department)

Project 1

Project: Characterization of an Automated Knee-Brace for Leg Muscle Rehabilitation
Code: Zaidi_01
Background: In a collaborative project between San Jose State University and IntelliScience Research Labs, an automated orthotic knee joint is being developed that can assist in the rehabilitation of partially paralyzed patients. Preliminary design analysis and testing of the device is published in ASME's International Mechanical Engineering Congress and Exposition (IMECE, 2019). This device currently relies on several electronic sensors that include a rotary encoder, a force sensor, and multiple electromyography (EMG) sensors to gather impulse signals and uses pneumatic actuators in the form of fluidic muscles. The operation of the device is heavily based on Arduino microcontroller and a complicated electronic breadboard circuit developed for the preliminary testing of this device.
Objectives: Full characterization of the knee brace by using a mannequin leg and recently developed PCB board. Changes in the current design are required.
Scope: Full characterization of the device will lead to data that will be published in various conferences and journals. The device will be compared to its counterparts available in the market.
Nature of work: 100 percent experimental. Experimental work will take place at Hastest Solutions and IntelliScience Research Labs located on South 10th Street, San Jose.
Sponsors: Hastest Solutions and IntelliScience Research
Number of Students: Four students max.

Project 2

Project: Theoretical and Experimental Investigation of passive cooling techniques for high-power LED panels.
Code: Zaidi_02
Background: Previous experimental work completed at San Jose State University (SJSU) in which a heat sink was attached to the LED panel, resulted in a temperature reduction of about 29%. Additionally, heat pipes were attached to the heat sink yielding a further 43% reduction in the temperature of the panel. Furthermore, the heat pipes were replaced by locally developed thermosyphons from which a 57.6% temperature reduction was observed. This percent reduction is comparable to that achieved by the operation of two active fans provided in the commercial design of the LED panel. [Vincent and Zaidi et.al, NCUR 2019 Proceedings].
Objectives: Select a high-power LED panel that is commercially available and conduct thermal management to incorporate passive cooling techniques. The concept of adding a heat sink with internally embedded or externally attached thermosyphons will be investigated.
Scope: Full characterization of the device will lead to data that will be published in various conferences and journals. Thermal management of high-power LED panels is a great challenge and this research will be applicable in many other parts of the industry.
Nature of work: 50 percent experimental and 50 percent theoretical (Ansys Modeling). Experimental work will take place at Hastest Solutions and IntelliScience Research Labs located on South 10th Street, San Jose.
Sponsors: Hastest Solutions and IntelliScience Research
Number of Students: Four students max.

Project 3

Project: Study of a DBD Plasma Jet for Rapid Healing and Sterilization of Chronic Wounds.
Code: Zaidi_03
Background: Non-equilibrium plasma jets are used for rapid healing and sterilization of wounds. The work proposed here is based on a DBD plasma jet (**US9,433,071B2**, Zaidi) that was operated with both helium/argon as a working gas. Previous work included the characterization of the plasma jet where its length/temperature were measured as a function of applied voltage and gas flow rates (SCCUR 2019).
Objectives: Development of a new design that will replace the current plasma torch. The new plasma device will be fully characterized and will be test against home-grown bacterial colonies to see its impact as the bacteria is exposed to plasma. Blood coagulation under the plasma jet will also be investigated.
Scope: Full characterization of the device will lead to data that will be published in various conferences and journals. Devices for repaid healing and sterilization of wounds are required in bio-medical industry.
Nature of work: 100 percent experimental. Experimental work will take place at Hastest Solutions and IntelliScience Research Labs located on South 10th Street, San Jose.
Sponsors: Hastest Solutions and IntelliScience Research
Number of Students: Four students max.

Project 4

Project: Energy Analysis of Water-Cooled Photovoltaics and Waste Heat Water
Code: Zaidi_04
Background: A large photovoltaic panel was modified to incorporate water cooling system All components were designed, fabricated, and installed on the solar deck. Initial leak evaluation was completed. PCB board to operate the system remotely was designed and is operational. Thermocouples are installed and calibrated for the operations. All fixtures required to hold the system are designed and fabricated. The system is now mounted on the solar deck located at SJSU.
Objectives: Make the current setup operational and characterize the solar panel using various experimental techniques.
Scope: Full characterization of the device will lead to data that will be published in various conferences and journals. Passive cooling of solar panels will enhance their performance. The current cooling technique will also provide heated water for other household applications.
Nature of work: 80 percent experimental and 20 percent Ansys modeling. Experimental work will take place at the SJSU solar deck.
Sponsors: Internally funded.
Number of Students: Four students max.

Project 5

Project: Investigation of a Novel Technique to Improve the 3D-prinetd Parts Quality
Code: Zaidi_05
Background: In a previous research project at San Jose State University, a 3D-Printer nozzle design was modified to see the impact on the quality of fabricated parts [V.K. Viswanathan, J.D. Rossi, O. Keles, Fused Deposition Modeling with Added Vibrations: A Parametric Study on the Accuracy and Mechanical Properties of Printed Parts, Research paper in progress]. The project explored the use of externally induced mechanical vibrations to the nozzle tip as a potential method to improve the quality of 3D printed parts. Induced vibration was expected to decrease the porosity of printed parts and improve the cohesion between print beads, ultimately improving their mechanical properties. Based on the tensile test of the printed specimen, it was concluded that the parts printed with induced vibrations

had improved mechanical properties. The porosity of the printed parts was reduced significantly as a result of the induced vibrations.

Objectives: In the current project, the limitations encountered in the above project will be addressed. One such limitation was related to the directional movement of the nozzle during its vibration. One degree of freedom vibrational movement was proposed that restricted the operation in other directions. In this project we will be looking for an induced rotational movement of the nozzle as it vibrates and takes short steps along the horizontal direction. We need to propose the design and try to manufacture the full system that can be mounted on a commercial 3D printer.

Scope: Full characterization of the device will lead to data that will be published in various conferences and journals. The device will find tremendous applications in the market.

Nature of work: 35 percent design and 65% experimental. Experimental work will take place at Hastest Solutions and IntelliScience Research Labs located on South 10th Street, San Jose.

Sponsors: Hastest Solutions and IntelliScience Research

Number of Students: Four students max.

Title: Driver Assistance System Development Platform Teaching Aid for Independence High School

Project Code: Mokri_01

Project Objectives

- Design and build a "platform" on an existing electric vehicle (EV) to investigate and test Advanced Driver Assistance Systems (ADAS) and connected vehicles as a teaching aid for the automotive technology classes at Independence High School in San Jose
    - Research and learn about design, components, and features of new technologies used in new vehicles
    - Build and demonstrate system operations on a marked course
    - Prepare instructional aides to support learning of ADAS in Auto Technology classes
    - Engage with high school students in a near-peer approach to build the platform

Project Scope

- Accept and understand project concept and specifications from sponsor
- Design, build, and test mechanical and electrical systems to meet specs
- Complete and submit deliverables to sponsor

Project Deliverables

- Functioning hardware, including actuators on brakes and steering
- SolidWorks models and drawings of components and assemblies
- Control electronics, schematic diagrams and procedures
- ADAS instructional aides
- Documentation of project work

Project Sponsor

- Independence High School
- Stevens Creek Lexus

Number of Student Spots

- 5

Project Graphic

Title: Automated Gravel/sand Bag Handling Machine for CalTrans Flood Control Projects

Project Code: Mokri_02

Project Objectives

- Design, build, and test a prototype robotic machine to open and feed bags into an existing large-scale trailer mounted system which produces filled and sewn gravel/sand bags.
- Redesign the prototype bag feed assembly, built by last year's ME195 team making it more functional, faster, reliable and suited for harsh dusty environment.
- Currently the mobile trailer mounted bagging system relies on individuals to hand load bags and would benefit from a robotic automated bag loading machine to reduce labor and increase safety requirements meeting OSHA standards.
-

Project Scope

- Meet with sponsor, inspect existing large-scale system, take measurements, review operation and establish specifications.
- Develop design options based on last year's project to improve function, design the bag handling machine and present to sponsor
- Build and test a robotic bagger prototype

Project Deliverables

- Design of a new bag handling machine using SolidWorks and MatLab, or similar, present to sponsor for review/comment
- Functioning prototype delivered to sponsor
- Interface controls between the existing machine and the new prototype bag feed assembly.

Project Sponsor

- Golden Gate Mechanical, Inc. – Santa Clara

Number of Student Spots

- 5

Project Graphic

Title: Retractable Wheelchair Ramp and Handrails for Shuttles Busses

Project Code: Mokri_03

Project Objectives

- Design a motorized wheelchair ramp and handrail assembly that deploys and retracts on both sides of a shuttle bus which is ADA compliant and suitable for handicapped individuals.
    - Research existing bi-fold and rotary designs
    - Design the assembly using SolidWorks models and MatLab simulations, or similar tools.
    - Build and demonstrate function of a prototype assembly mounted on an existing mockup shuttle bus available on campus in IS building.

Project Scope

- Discuss scope and requirements with sponsors
- Accept and understand project concept and specifications from sponsor
- Design, build, and test a prototype of the mechanical and electrical aspects of the retractable ramp which meets specifications
- Complete and submit deliverables to sponsor

Project Deliverables

- SolidWorks models and MatLab simulations demonstration function of assembly
- Functioning prototype of ramp and handrail assembly mounted on existing mockup shuttle bus
- Full documentation of project work

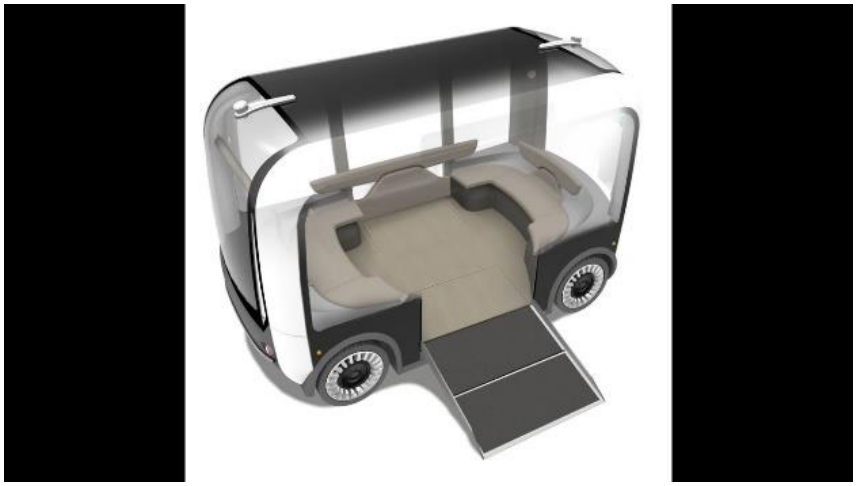
Project Sponsor

- Toyota and Dr. Barez

Number of Student Spots

- 5

Project Graphic



Title: Solar PV Test System With Battery Storage For Performance Comparison of Thin-Film and Crystalline Silicon PV

Project Code: Mokri_04

Project Objectives

- Design and assemble a solar photovoltaic (PV) test system with existing modules, inverter, battery, grid tie, irradiance sensor, etc. Use system to test and compare performance of thin-film versus crystalline silicon modules
    - Develop an algorithm to process data by regression analysis to determine Performance Ratio.
    - Design and build an IV curve tracer for quick assessment of PV modules
    - Investigate grid based "duck curve" using the storage capability of the test system.

Project Scope

- Develop the details of the project to meet above objectives, propose and get agreement of proposed scope from sponsors
- Accept and understand project concept and specifications from sponsor
- Complete and submit deliverables to sponsor

Project Deliverables

- Report with results of comparisons, data analysis, and Performance Ratios
- IV Curve Tracer
- Teaching aides for ME170
- Documentation of project

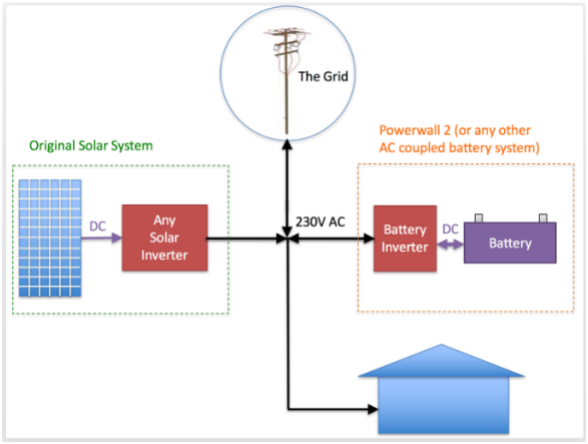
Project Sponsor

- ME170 Instructors

Number of Student Spots

- 5

Project Graphic



Title: Truck Lift and Load Apparatus

Project Code: Mokri_05

Project Objectives

- Design, build and test a motorized apparatus to lift a 500 lb. payload into a pickup truck
  - Design for personnel and payload safety and function
  - Apparatus should mount into trailer hitch receiver on truck
  - Compact for easy installation and storage

Project Scope

- Discuss scope with sponsor and agree on concept, specifications, schedule and cost
- Design, build, and test a prototype demonstrating mechanical and electrical aspects
- Complete project and submit deliverables to sponsor

Project Deliverables

- SolidWorks models of apparatus showing lift and load design and function
- Functioning prototype
- Documentation of project work

Project Sponsor

- Motiontek

Number of Student Spots

- 5

Project Graphic

Title: Electric Vehicle Mobile Charging Robot (EV Charge-Bot)

(NOTE: PROJECT ENROLLMENT FULL)

Project Code: Mokri_06

Project Objectives

- Design an autonomous mobile cart having on-board electrical energy storage which traverses a parking lot to draw energy from a docking station, and discharge energy into a parked EV.
    - Design the EV Charge Bot and select a subsystem (such as the motorized arm which engages the electrical connectors)
    - Design, build, and demonstrate a prototype of the selected subsystem.

Project Scope

- Discuss scope with sponsors and agree upon subsystem to focus
- Accept and understand project concept and specifications from sponsor
- Design, build, and test mechanical and electrical aspects of the subsystem to meet specs
- Complete and submit deliverables to sponsor

Project Deliverables

- SolidWorks models of EV Charge-Bot showing design and function
- Functioning prototype of subsystem the EV Charge Bot (such as the cart and motorized arm which engages the electrical connectors).
- Test plans and results
- Documentation of project work

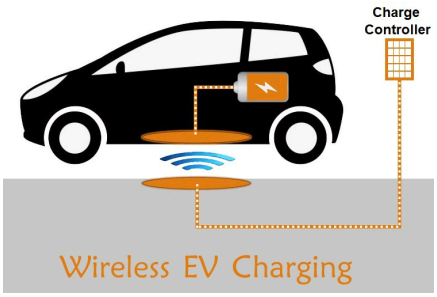
Project Sponsor

- Kevin Cameron, Chris Novak, Inventors

Number of Student Spots

- 5 (This project is full)

Project Graphic



Title: Multiple Projects Sponsored by Jabil

Project Code: N/A

Project Objectives

- Jabil representative will present these projects during the first general session on 08/19/2020
- These will be multi-disciplinary teams with one member from ME. You will need to collaborate with students from other departments
- Your work will be closely monitored and advised by your instructor and a mentor from Jabil
- If the COVID restrictions are lifted, you may be able to work at Jabil's facilities

Project Scope

- TBA

Project Deliverables

- Will be announced soon

Project Sponsor

- Jabil

Number of Student Spots

- 06 (up to 6 projects – one ME student per team)

Project Graphic