

ENG
INE
SHOW
CASE

Virtual
Exhibition

JUNE 1 - 7, 2020



ELECTRICAL & COMPUTER
ENGINEERING

UNIVERSITY of WASHINGTON



ENGINEERING
INNOVATION &
ENTREPRENEURSHIP



Photos from the 2019 ENGINE Showcase

A MESSAGE FROM THE CHAIR

Welcome to the University of Washington Department of Electrical & Computer Engineering's (UW ECE's) 2020 ENGINE INnovation and Entrepreneurship (ENGINE) Showcase. It's a delight every year to invite our industry and campus colleagues to join us as we showcase and celebrate the hard work of our students, who will soon be graduating to become the next generation of electrical and computer engineers.



Because of the unexpected impact of the novel coronavirus, this year's ENGINE Showcase is a unique, virtual experience. We are featuring over 40 team projects online that cover topics as diverse as computer systems architecture, power electronics, machine learning, communications and robotics. The students here today comprise the majority of our graduating seniors.

ENGINE, our Engineering Entrepreneurial Capstone program, was created to enable students to work in teams on industry-sponsored projects. This program, generously endowed by our alums Milton and Delia Zeuschel, is designed to develop students' skills in systems engineering, innovation and project management.

Initiated four years ago, ENGINE has grown every year, from just four projects in 2016 to over 40 in 2020. Milt and his business partner John Reece have also spent significant time to give feedback and to shape the program. In addition, John has given several lectures to our students over multiple years on career development, teamwork, entrepreneurship and leadership.

I wish to extend a special thanks to all our industry sponsors for their generous contributions, as well as their flexibility and creativity, helping students adapt their projects to be completed in a virtual setting. I'd also like to thank our faculty mentors; ENGINE Program Director, Payman Arabshahi; College of Engineering Capstone Director, Jill Kaatz; and Associate Dean for Academic Affairs, Brian Fabien, as well as our amazing ENGINE Teaching Assistants, Shruti Misra, Niveditha Kalavakonda, Yana Sosnovskaya, and Brandon Yee, without whom these projects would not have been possible.

Congratulations to all students on the completion of your final capstone projects! The knowledge you have gained from this experience will serve you well in the coming years. I have no doubt that you will build successful and rewarding careers.

In closing, I want to recognize and thank our UW College of Engineering Dean, Nancy Allbritton. She has been a steadfast leader and a great support to UW ECE during these most challenging times.

I look forward to having the chance to talk with you about future collaborations, whether in-person, virtually or via email. Enjoy the ENGINE of UW ECE!

Best to all,

Eric Klavins

A handwritten signature in black ink, appearing to read 'E. Klavins', written in a cursive style.

Professor and Chair, UW Department of Electrical & Computer Engineering

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PROJECT 01

STUDENTS

ADIL ISLAM,
SHAWN HSIAO,
KALYANI MARATHE,
NING WANG

FACULTY ADVISORS

RADHA POOVENDRAN,
BHASKAR
RAMASUBRAMANIAN

INDUSTRY MENTORS

BALA NEERUMALLA,
YUHUI HUANG

SPONSOR

NUTANIX



OPEN SOURCE HONEYPOT MANAGEMENT SYSTEM

Development of an open source honeypot management system that is easy to deploy, operate, and customize and provides options to integrate into a centralized log management system.

PROJECT 02

STUDENTS

GRANT NEUMAN,
BATINA SHIKHALIEVA,
JAMES MANN,
JUNHONG CAI,
SHAHRZAD FEGHHI

FACULTY ADVISOR

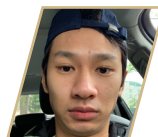
PAYMAN ARABSHAHI

INDUSTRY MENTORS

KEVIN HRUZA,
DAMON ZIRKLER,
DEREK CHAN,
COLLEEN PIPER

SPONSOR

ALASKA AIRLINES



AIRCRAFT SOFTWARE CONFIGURATION TOOL

Development of a web portal to allow maintenance technicians access to exact software configurations that need to be loaded onto a particular aircraft and give engineers the ability to reliably and accurately update aircraft maintenance information.

STUDENTS

RICHARD BURBERRY,
NICHOLAS MATHEWS,
NATHAN MCCOWN

FACULTY ADVISOR

TAI-CHANG CHEN

INDUSTRY MENTOR

ALEX RODRIGUEZ

SPONSOR

REALWEAR

INFRARED CAMERA FOR HMT-1

Design, development, and test of a custom PCB and 3D-printed housing for a Lepton infrared camera to interface with RealWear's HMT-1 headset, maintaining a low-profile, industrial design.

**STUDENTS**

BOBIN SHIH,
ASHIKA ROHIT,
NICHOLAS PUGLIESI,
JING RAN MENG,
LIRUI WANG

FACULTY ADVISOR

HOWARD J. CHIZECK

INDUSTRY MENTORS

NICHOLAS KEEHN,
CORINA ARAMA

SPONSOR

MICROSOFT

SMART SERVER MOVER

The aim of the project is to investigate a full-stack robot system composed of computer, electrical, and mechanical subsystems, to automate the process of server replacement and repair. We attempt to build a mobile manipulator that can detect and localize, pick and place, carry servers and navigate in the server room. Our final system is capable of powering a conveyor, simulating a pick-place procedure, and successfully reaching the server rack in the real world.



PROJECT 05

STUDENTS

ADITYA JAIN,
VICENTE ARROYOS,
TYVON TABADERO

FACULTY ADVISOR

HOWARD CHIZECK

INDUSTRY MENTOR

VIVEK BURHANPURKAR

SPONSOR

CYBERWORKS ROBOTICS

AUTONOMOUS WHEELCHAIR FOR PATIENT DELIVERY

Development and integration of graceful motion and motion predictive algorithms using a robot operating system with sensor packages to perform autonomous patient delivery in hospital environments.



PROJECT 06

STUDENTS

RUSSELL KOOK,
NATHANIEL RHODES,
FAISAL ALSALLUM,
JONATHAN CASAMAYOR

FACULTY ADVISOR

HOWARD CHIZECK

INDUSTRY MENTORS

RICARDO FRITZKE,
SAM PEDIGO

SPONSOR

BOEING

ROBOT NORMALITY SENSOR

Design, fabrication, and test of a non-contact normality sensor system along with a controller to read the sensors, calculate the pitch and yaw, and display the angles.



STUDENTS

DAVID ALBERS,
ZHONGYI DAI,
CHARLIE FISHER,
STEVE LAMBERT

FACULTY ADVISOR

TAI-CHANG CHEN

INDUSTRY MENTOR

DAVID PROKOP

SPONSOR

TRUMEDICINES

SMART PILL PACK DISPENSER

Development of a pill pack dispenser to improve medication adherence and verify pill authenticity. This dispenser implements machine learning and unique pill patterns to track prescription medications.

**STUDENT**

MATTHEW PANIPINTO

FACULTY ADVISOR

RANIA HUSSEIN

INDUSTRY MENTOR

PAUL MCELHANY

SPONSOR

NATIONAL OCEANIC
AND ATMOSPHERIC
ADMINISTRATION

**SMART LIGHT TRAP:
INTELLIGENT CRAB
POPULATION MONITORING**

Refinement of a sensor package to be deployed on crab traps used to monitor local crab larvae populations. The sensor package is capable of long-term deployment and collection of a range of data, including temperature, salinity, and wave action.



PROJECT 09

STUDENTS

MARCUS CHU,
WICHWONG PREMVUTI,
IAN GOOD,
KHAI PHAM

FACULTY ADVISOR

HOWARD CHIZECK

INDUSTRY MENTOR

NICHOLAS KEEHN,
CORINA ARAMA

SPONSOR

MICROSOFT

AUTOMATED SERVER REPAIR WORKCELL FOR DATA CENTERS

Development of a computer vision-based platform to repair data center servers with variable pose using two collaborative robotic arms.



PROJECT 10

STUDENTS

KATIE PARK,
SIMONE DYE,
SHU XU,
ANDREAS PASSAS

FACULTY ADVISOR

BAOSEN ZHANG

INDUSTRY MENTOR

LUCIE HUANG

SPONSOR

SEATTLE CITY LIGHT

ECO-DISTRICTS: DESIGNING GREEN CITIES OF THE FUTURE

Investigating the feasibility of implementing an Eco-district in the West Campus area of the University of Washington campus including a proposed design and major findings.



STUDENTS

ANDREW HALL,
FORREST MILLER,
KIRILL SEMENOV

FACULTY ADVISOR

ARKA MAJUMDAR

INDUSTRY MENTORS

ALEXANDRE BACOU,
BRAD KAUFFMAN

SPONSOR

LATÉCOÈRE

RF LINK OVER MULTIMODE FIBER ANALYSIS

The project attempts to facilitate optical communication within commercial airplanes. Through simulations, we modeled a suitable communication network and measured the performance characteristics of the network.

**STUDENTS**

DYLAN DAY,
NATHAN PARK

FACULTY ADVISOR

BRIAN JOHNSON

INDUSTRY MENTORS

NIDHI HARYANI,
SATISH RAJAGOPALAN

SPONSOR

AMAZON PRIME AIR

GAN INVERTER FOR ELECTRIC AIRCRAFT PROPULSION

Development and testing of a gallium nitride (GaN) based inverter for use in electric aircraft motor drive systems. The inverter uses wide-bandgap semiconductors in to improve performance, efficiency, and power density of current electric propulsion systems.



PROJECT 13

STUDENTS

NATHAN NESS,
TAO JIN,
JIARONG QIAN,
ZUHAIR LATEEF

FACULTY ADVISOR

HOWARD CHIZECK

INDUSTRY MENTORS

SARAH HOVSEPIAN,
ERIC JUNKINS,
WAYNE ZIMMERMAN

SPONSOR

NASA JET PROPULSION
LABORATORY

COOPERATIVE AUTONOMOUS DISTRIBUTED ROBOTIC EXPLORERS (CADRE)

Development of autonomous multi-robot system with sensors for collection and processing of scientific data.



PROJECT 14

STUDENTS

JAEWON CHOI,
PHUC TO,
KRISHNASREE
UPADHYAYULA

FACULTY ADVISOR

TAI-CHANG CHEN

INDUSTRY MENTORS

MICHAEL NASSIRIAN,
SIAMAK POURSAHAHIAN

SPONSOR

ARVR ACADEMY

WEARABLE PET HEALTH AND LOCATION TRACKER

Design and build of an efficient collar that tracks biometrics and location of pets with integrated user-friendly interface and IoT system for multi-device capability.



STUDENTS

JINA YOO,
SHERMAN WHITE

FACULTY ADVISORS

FAISAL HOSSAIN,
HOWARD CHIZECK

INDUSTRY MENTORS

CAMERON KUKES,
KELSIE CRAWFORD

SPONSOR

WASHINGTON STATE
DEPARTMENT OF
TRANSPORTATION

CEE HYDO-CUB BOT

Washington State Department of Transportation currently uses the HIVE Bot to survey and record inspections of culverts. However, the HIVE Bot is unable to go through the entire length of the culvert without losing Wi-Fi connection; and has limited camera range, size, and speed control. In this project we improve the current HIVE bot design and address its issues from an electrical engineering perspective.

**STUDENTS**

SIMON WANG,
ERIK WHEELER,
DAVID YU,
HAOBO ZHANG

FACULTY ADVISOR

RANIA HUSSEIN

INDUSTRY MENTOR

JIM JENKINS

SPONSOR

BOEING EMPLOYEES'
CREDIT UNION

CLOUD-BASED FACIAL RECOGNITION SYSTEM

Development of a cloud-based facial recognition system for ATMs and financial centers to identify customers and to provide a secondary authentication.



PROJECT 17

STUDENTS

NAHUM TILAHUN,
SIDDHARTH JADAV,
SHIH-HAO YEh

FACULTY ADVISOR

RANIA HUSSEIN

INDUSTRY MENTORS

IAN BYRNES,
NIRAV DESAI,
TROND NILSEN

SPONSOR

MOONBEAM

WRITING INTERFACE FOR COLLABORATION IN VR

Design, development, and test of an intelligent interface that enhances a person's ability to collaborate within Virtual Reality (VR). This involved creation of an interface that allows the user to write onto a wireless pad, giving the user the same feeling as if they were writing on a white board or notepad.



PROJECT 18

STUDENTS

YA YI,
CHIAO-TUNG YANG,
NIRAJ PORECHA

FACULTY ADVISOR

TAI-CHANG CHEN

INDUSTRY MENTORS

XIANG CHEN,
PAYMAN ARABSHAHI

SPONSOR

TUPL INC.

SMART DATA-LABELING, STATISTICS AND ANALYTICS SYSTEM

Analyzing data from telecom operators is a time-consuming process, and the majority of the work requires people working manually to dig out useful information from given datasets. To facilitate the data analysis process, we created a tool to automatically provide basic knowledge of the data, such as statistics, correlations, patterns, relations etc., to aid and direct data scientists towards deeper analysis.



STUDENTS

ANTON BEZRUCHKIN,
ZIHAN CAO

FACULTY ADVISOR

HOWARD CHIZECK

INDUSTRY MENTORS

ANAT CASPI,
RICKY ZHANG

SPONSOR

TCAT

PRECISION VEHICLE POSITIONING IN URBAN AREAS

This project aims to minimize the error in GPS positioning of vehicles in urban areas. The final deliverable of the project is a cost-effective product composed of a sensor fusion system for positioning, and a visual marker detection system for drift correction.

**STUDENTS**

CHENG-YEN YANG,
HWAI-JIN PENG,
PINZHU QIAN,
TYAN TRINH

FACULTY ADVISOR

PAYMAN ARABSHAHI

INDUSTRY MENTORS

KUMAR MADDALI,
CHANGZHENG JIANG

SPONSOR

TELENAV

AN INCREMENTAL LEARNING BASED SPELL CHECKER FOR LOCAL SEARCH USER QUERIES

Development of a robust address spell checker that suggests corrections of misspellings in real-time with incremental learning ability.



PROJECT 21

STUDENTS

JIELING WANG,
HAOTIAN YUAN,
KALANA SAHABANDU,
BATINA SHIKHALIEVA,
YIMENG LI

FACULTY ADVISOR

PAYMAN ARABSHAHI

INDUSTRY MENTORS

TED HANSON,
BRIDGET FAHERTY

SPONSOR

UW COLLEGE
OF ENGINEERING

ADMINISTRATIVE AND FINANCIAL WEB PORTAL

Development of a web application with a background database that can be used internally for College of Engineering departments to manage, process and track administrative and financial requests for both students and fiscal staff, including purchasing, reimbursements, travel requests (booking and reimbursements), and procard document submission.



PROJECT 22

STUDENTS

ZHENG HONG TAN,
SANDEEP RAMANATHAN,
JUNNAN KOU,
ZIQIAO XU

FACULTY ADVISOR

RANIA HUSSEIN

INDUSTRY MENTOR

ALEXANDRA TESTE

SPONSOR

OFFERUP

DETECTION OF OBJECT FEATURES IN IMAGES VIA DEEP LEARNING WITH OFFERUP

Development of image classification models using Google Cloud AutoML and TensorFlow with image data collected from OfferUp customers. The models are integrated into web and mobile applications to identify images and predict the classes to which they belong, such as distinguishing shoes from clothes, the gender of the items, and the various types of shoes.



STUDENTS

RYAN ROSS,
TYLER LA,
DANIYAL ZULFIQAR,
YITONG SUN

FACULTY ADVISOR

TAI-CHANG CHEN

INDUSTRY MENTORS

JEFF AHMET,
AHMAD ARMAND

SPONSOR

T-MOBILE

T-MOBILE NB-IOT PACKAGE TRACKER

Implemented an NB-IoT device into packages with the intent of tracking them more closely and accurately to prevent package theft. Integrated the NB-IoT device with sensors that communicate with servers and a web user interface.

**STUDENTS**

ELIZAVETA MANEVICH,
DALIN DU,
JADE JWA,
KUAN-LIN CHEN

FACULTY ADVISOR

TAI-CHANG CHEN

INDUSTRY MENTOR

MITCHELL JOHNSON

SPONSOR

BOEING

DRILLED HOLE EXIT BURR GAUGE

Development and testing of an exit burr gauge to measure airplane wing drill hole burrs from the outside, reducing the inefficiencies of the current measuring process.



PROJECT 25

STUDENTS

YUCHONG LIU,
ZHICHAO LEI

FACULTY ADVISOR

SUMIT ROY

INDUSTRY MENTOR

AUSTIN THIND

SPONSOR

PACCAR

CAMERA AND RADAR FUSION FOR OBJECT DETECTION

Development of a system that detects and classifies objects by fusing radar and camera data, and boosts object detection accuracy from camera and localization precision from radar.



PROJECT 26

STUDENTS

BRIAN NGUYEN,
SAIRAM TABIBU,
HANWEN GUO,
WEINING LIANG,
JACK MA

FACULTY ADVISOR

LANIA HUSSEIN

INDUSTRY MENTOR

PHU NGUYEN

SPONSOR

AMAZON

QUICKDRAW GAME - SHAPE DETECTION USING AWS DEEPLENS AND ALEXA ECHO DEVICE

Development of a deep-learning model to detect object shapes from the user drawings by using DeepLens to capture input images and Alexa echo device to interact with the user throughout the QuickDraw game.



STUDENTS

DANIELLE FUNG,
ANUJA KALEKAR,
KARAN CHAUHAN

FACULTY ADVISOR

PAYMAN ARABSHAHI

INDUSTRY MENTORS

ADRIEN LEVRAT,
CEDRIC VINCENT

SPONSOR

WITEKIO

NEXT-GEN CI/CD FACTORY FOR EMBEDDED SYSTEM

Design and implementation of an autonomous CI/CD solution for embedded systems using Fuego and Witekio's automation lab along with deployment of the OS image updates over the air.

**STUDENTS**

BHARADWAJ MUKUND,
MEACH TEKHONG

FACULTY ADVISORS

SUMIT ROY,
ARKA MAJUMDAR

INDUSTRY MENTORS

NELSON JAMES,
BALTON CHRIS

SPONSOR

PACCAR

LIDAR AND RADAR INTERFERENCE AND SYNCHRONIZATION USING SHORT RANGE COMMUNICATION

Design of an embedded platform for LiDAR and Radar synchronization using Peer-to-Peer (P2P) communication to reduce inter-vehicle interference.



PROJECT 29

STUDENTS

BENJAMIN AZEVEDO,
CHENYANG BAO,
CHANG LIU

FACULTY ADVISOR

ELI SHLIZERMAN

INDUSTRY MENTORS

TOM MITTAN,
PETE SULCS,
MATT NGUYEN

SPONSOR

LOCKHEED MARTIN

PREDICTIVE DATA ANALYTICS FOR A COMPLEX SYSTEM-OF-SYSTEMS

Predictive health monitoring, fault investigation, and failure analysis interface for TO-220AB Power MOS-FETs using regression algorithms and neural networks.



PROJECT 30

STUDENTS

ROBERT ROCHLIN,
TIANKAI ZHENG,
ZHENGHAO GUO

FACULTY ADVISOR

PAYMAN ARABSHAHI

INDUSTRY MENTORS

JON HERLOCKER,
NEIL BLAVINS

SPONSOR

TIGNIS/PSR MECHANICAL

FAULT DETECTION IN HVAC

Designed a data-driven web application for HVAC system technicians to remotely diagnose and monitor their buildings and enable identification of problems that would otherwise remain obscure.



STUDENTS

DONGHYUK KIM,
JARED SCHWARTZ,
PETER TRAN,
TAKUNDA MASIKE

FACULTY ADVISOR

HOWARD CHIZECK

INDUSTRY MENTORS

IRIS TSAI,
SHAHAB SHAHDOOST

SPONSOR

ACCESS LASER

MODULAR CLOSED-LOOP CONTROL BOARD FOR INFRARED LASER SYSTEMS

The project aims to design a modular closed-loop control system with a user-friendly interface for customizable infrared laser systems. The laser control system is used to provide stable laser power by adjusting the laser control parameters detected by a beam detector module. A laser simulation module is also designed for system testing.

**STUDENTS**

CHASE HUNTER,
JOHN CHEN,
KARINE CHEN

FACULTY ADVISOR

SAM BURDEN

INDUSTRY MENTORS

ERIC JONES,
JOSEPH RECK,
NICK VALLADAREZ

SPONSOR

BOOZ ALLEN HAMILTON,
NUWC KEYPORT,
UW APL

HUMAN POWERED SUBMARINE AUTONOMOUS ROLL CONTROL MODULE

Development of an autonomous system for controlling the roll of the human-powered submarine as it navigates through the water. The system is composed of a prototype hardware module with a proof-of-concept vehicle orientation display, a data control loop, and a route tracking system.



PROJECT 33

STUDENTS

AUGUST AVANTAGGIO,
KYLE JOHNSON

FACULTY ADVISORS

HOWARD CHIZECK

INDUSTRY MENTOR

IAN OCONNOR

SPONSOR

KENWORTH

DYNAMIC TRAILER- MEASUREMENTS CALCULATOR

We have designed a system that calculates the length of various trailers and wheelbases using a dynamic turn angle measurement. The system is mountable in its entirety to a Kenworth tractor, and gathers data in near real time. Calculated values are transmitted to the truck over the vehicle CAN network.



PROJECT 34

STUDENTS

LILLIAN THEIL,
RICHARD WANG,
AJHITA SHRY,
RIKUO SATO

FACULTY ADVISOR

BRUCE DARLING

INDUSTRY MENTOR

ROB GREENEWALD

SPONSOR

STRYKER

WIRELESS PULSE OXIMETER

Development of a wireless pulse oximeter that uses light to measure SpO₂, SpCO, and SpMET and displays the measurements on a computer, in real time. This will allow emergency medical teams more flexibility in the field compared to existing devices.



STUDENTS

CASEY SILCOX,
ASHLEY GREY,
CHENGHAO CHEN

FACULTY ADVISOR

HOWARD CHIZECK

INDUSTRY MENTORS

BARRY CLARK,
STEPHANIE DRENCHEN,
COSTAS BOULIS

SPONSOR

BRIGHT MACHINES

ROBOTIC ARM ERROR ANALYSIS AND REDUCTION

This project investigates error analysis and reduction methods in small-scale uArm robotics, with the intent to design robust methods that can be scaled to larger industrial machines. The uArms, equipped with touch-screen styluses, are programmed to tap an iPad in one of three test schemes. Data from the iPad is then compared to the expected points to calculate and model the uArm error. Average error functions are then inverted and reapplied to the robot arms in order to reduce the error experienced by the devices.

**STUDENT**

ANABEL MATHIESON

FACULTY ADVISOR

RANIA HUSSEIN

INDUSTRY MENTOR

PAUL MCELHANY

SPONSOR

NATIONAL OCEANIC
AND ATMOSPHERIC
ADMINISTRATION

SMART LIGHT TRAP: INTELLIGENT CRAB MONITORING

Development of a smart light trap with additional sensor technology and an enhanced user interface to intelligently monitor the surrounding water conditions while capturing megalopae (larval crabs), thereby allowing correlation of megalopae abundance with surrounding water conditions.



PROJECT 37

STUDENTS

NIMA KHERADPOUR,
XINYU GU

FACULTY ADVISOR

HOWARD CHIZECK

INDUSTRY MENTORS

ROBERT EMERY,
MARISSA KRANZ,
ERIC DORMAN

SPONSOR

UW MEDICAL
CYCLOTRON FACILITY

CYCLOTRON RADIO-FREQUENCY MOTION CONTROL SYSTEM

Radio Frequency (RF) systems are used in The University of Washington Cyclotron Facility to accelerate particles for various uses including cancer treatment, isotope creation, and advanced materials testing. To achieve a concise, efficient, and stable acceleration for different types of particles, an automatic motion control system for monitoring and regulating the cyclotron's RF motors is designed, built and tested.



PROJECT 38

STUDENTS

CHASE WHYTE,
CHIA-LIN LIU,
WEI DA CHEN

FACULTY ADVISOR

ARINDAM DAS

INDUSTRY MENTORS

TAK-KEI LEE,
JOHN DONG,
KARINA CUADRADO

SPONSOR

BOEING

CATEGORIZING AVIATION EVENTS USING MACHINE LEARNING TECHNIQUES

Development of an algorithm to classify aviation incidents based on CICTT categories which extracts keywords from the textual report using TF-IDF on n-grams and categorizes incidents via machine learning approaches.



STUDENTS

ABHYUDAYA GUPTA,
KANIKA AGGARWAL
BRIAN JACOBS,
CHRISTOPHER BAUER,
HOUYU DONG,
CASPER HSIAO

FACULTY ADVISOR

SUSAN MURPHY

INDUSTRY MENTORS

DEVIN CHARLES,
EVAN FRANK

SPONSOR

AIRBUS



AIRBUS URBAN MOBILITY BATTERY REPLACEMENT VEHICLE

Implementation of charging stations for urban aerial mobility (UAM) vehicles, where a battery replacement vehicle will swap out the old battery for a charged one.

STUDENTS

REUEL ABAD,
ANDREW STEINKRAUS,
STEVEN CHIU,
MATHIAS VAN PATTEN,
JONATHAN DO

FACULTY ADVISOR

SUSAN MURPHY

INDUSTRY MENTOR

PAUL APPLEWHITE

SPONSOR

APPLEWHITE AERO

APPLEWHITE AERO BATON

Development of an autonomous delivery drone that is capable of being deployed from moving aircraft. The drone uses GPS and LiDAR for intelligent navigation and is capable of carrying small loads such as a blood transfusion, first aid kit, or a water bottle.

STUDENTS

ZECH LATIMER,
DAVID ARNOLD,
RICARDO HERRERA,
JEREMY NGUYEN,
CLAUDIO PEREZ ROCHA,
SUCHITA RAMAN,
JAMES TAVERNE

FACULTY ADVISORS

SUSAN MURPHY,
MEHRAN MESBAHI,
BECHET ACIKMESE

INDUSTRY MENTORS

THE AERONAUTICS &
ASTRONAUTICS CUBESAT
TEAM

SPONSOR

CUBESAT

CAPSTONE, IMAGING AND ASTRIONICS (CIA) BOARD FOR CONTROLLING CUBESAT MAGNETORQUERS

The CubeSat capstone project deals with designing and implementing a subsystem of the AACT's cube satellite. This subsystem involves the creation of software and hardware to control magnetorquers, which help control the orientation of the satellite.





THANK YOU

Milt & Delia Zeuschel and John Reece

The ECE department is enormously grateful for the vision and generosity of Milt (BSEE '60) and Delia Zeuschel, which has enabled us to develop the ENGINE program to its current scale. Through the magnitude of their endowment of the ENGINE program, the Zeuschels are helping to secure the futures of UW ECE engineers and promote continued local and statewide innovation.

We would also like to thank Milt's business partner, John Reece, for his unwavering support, having spent significant amounts of time giving feedback to shape the program. Additionally, John has given several lectures to our students over multiple years on career development, team work, entrepreneurship and leadership.

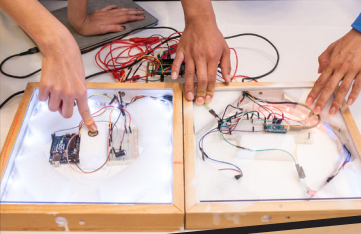
The ENGINE program is designed to develop students' skills in innovation, systems engineering, and project management. Initiated only three years ago, ENGINE has grown exponentially - from just four projects in 2016 to 43 in 2019.

Another component of the endowment is the Milton and Delia Zeuschel Professorship in Entrepreneurial Excellence, which was awarded to Professor Joshua Smith. The professorship allows the department to recruit, retain and reward entrepreneurially-driven faculty who will help build and sustain an engineering entrepreneurial ecosystem at the UW.

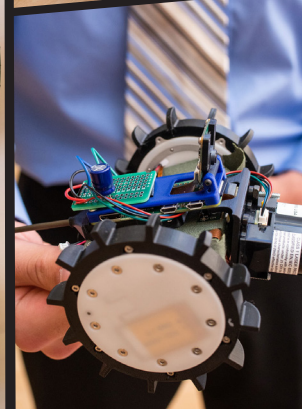
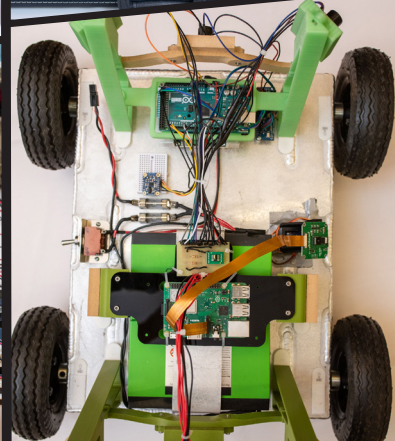
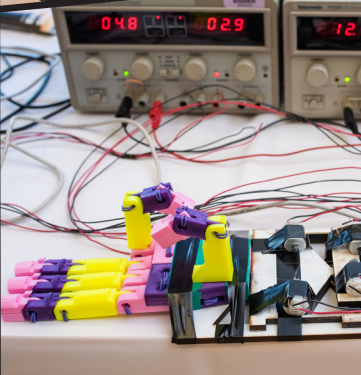
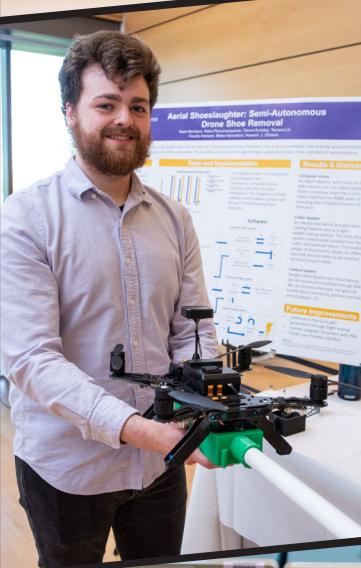
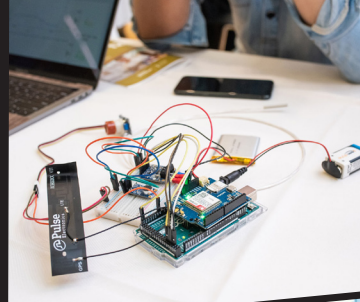
ECE is also deeply appreciative of our many industry sponsors for their support in mentoring students as part of the ENGINE program.



John Reece at the 2019 ENGINE Pitch Day event.



ENGINE 2019 PROJECTS





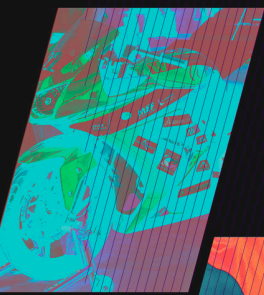
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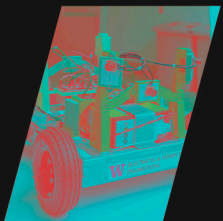
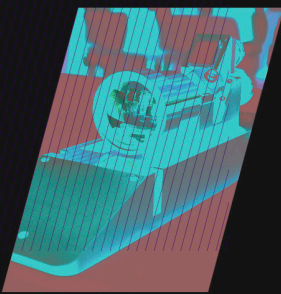
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