

## 4805/6 Required Prerequisite:

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## Project Sponsor:



**U.S. citizenship required**

Project Number:

1

Project Title: UAV Vertical Replenishment

SME: Pratap Tokekar

Customer POC: Douglas Cundiff

douglas.cundiff@navy.mil

## Project Summary:

NAVAIR is very interested in UAV operations. Vertical replenishment is the moving of supplies from one location to the other. Drone will identify various shaped objects, hover over them, pick them up, and deliver them to a predetermined location. Flight paths should vary according to obstacles encountered.

CONTROLS, ROBOTICS AND AUTONOMY (CRA)

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## Project Sponsor:



**U.S. citizenship required**

Project Number:

2

Project Title: UAV Vertical Replenishment

SME: Pratap Tokekar

Customer POC: Douglas Cundiff

douglas.cundiff@navy.mil

## Project Summary:

NAVAIR is very interested in UAV operations. Vertical replenishment is the moving of supplies from one location to the other. Drone will identify various shaped objects, hover over them, pick them up, and deliver them to a predetermined location. Flight paths should vary according to obstacles encountered.

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## Project Sponsor:



Project Number:

3

Project Title: IEEE Robot – Embedded Team

SME: Mark Jones

Customer POC: Logan Davenport

## Project Summary:

Embedded Team - Create an embedded system that integrates sensors, motors, and any peripheral necessary to complete the competition specifications as well as provide an API to be used by the software team. Assist in the design of the overall robot and develop solutions to the competition stages. You must collaborate with the other IEEE Robotics Team to design and integrate a complete robot.

Students must have completed 2534 and 3574 with B- or better

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## Project Sponsor:



Project Number:

4

Project Title: IEEE Robot – Electrical Team

SME: Arthur Ball

Customer POC: Logan Davenport

## Project Summary:

Electrical Team - Design and implement an electrical subsystem to provide the various components of the robot with power. Assist in the design of the overall robot and develop solutions to the competition stages. You must collaborate with the other IEEE Robotics Team to design and integrate a complete robot.

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## Project Sponsor:



US Citizens preferred.

Project Number:

5

Project Title: Malware Detection

SME: Walid Saad

Customer POC: Richard Pederson, richard.n.pedersen@lmco.com

## Project Summary:

This project will analyze high-performance methods for detecting malicious software (“malware”) patterns in data streams. The detection methodology draws in part on the algorithm disclosed in US Patent 8,701,162 Method and System for Detecting and Countering Malware in a Computer. The project will explore the application of advanced digital convolution techniques to this algorithm for the purpose of enhancing its accuracy.

Networking, Cybersecurity, Communications, Software Systems

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## Project Sponsor:



Project Number:

6

Project Title: **Vibration Monitoring Sensor**

SME: Tom Martin

Customer POC: Edward Vander Bilt, [evanderb@steelcase.com](mailto:evanderb@steelcase.com)

## Project Summary:

Small sensor designed and prototyped that would have the following characteristics: Low cost (\$50 each), Battery life of 5 days, SD Card storage, Measure vibration up to say 50G (that is yet TBD however), It does not need to have wireless capabilities. The sensor would be used to attach to product as it is shipped to determine where the forces (vibration) occurs in the process. The sensor will write the data to the SD card with a time stamp.

Micro-Nano Systems, Software Systems,

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## Project Sponsor:



**U.S. citizenship required**

Project Number:

7

Project Title: Subtransmission Voltage Distribution

SME: Jaime De La Ree

Customer POC: Walt Mendenhal, Steve Bowman, Mark Adkinson, Dan Morton

## Project Summary:

An industrial customer currently receives power from the local electric utility at a distribution voltage of 12.47 kV. In order to reduce their annual energy bill, the customer would like to switch tariff schedules by upgrading their service to a subtransmission voltage of 69 kV. This upgrade will require the addition of a customer owned and maintained substation with 69 kV/12.47 kV step-down transformers, protective devices, metering equipment, and supporting infrastructure. The substation must be arranged to allow equipment maintenance without service interruption and provide regulated voltage to the customer's existing overhead distribution lines regardless of minor voltage fluctuations from the utility. As the selected engineering firm, you will be responsible for the conceptual design phase and submitting an engineering report. This will include developing preliminary general arrangement drawings, grounding grid layouts, single line diagrams, and order of magnitude cost data. An additional area of exploration may include specifying instrument transformers for metering and protection schemes.

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## Project Sponsor:



Project Number:

8

Project Title: System Design of a Citizens Broadband Radio Service Deployment at Virginia Tech

SME: Allen MacKenzie

Customer POC: Steve Lee, [stlee@vt.edu](mailto:stlee@vt.edu), John Krallman, [krallman@vt.edu](mailto:krallman@vt.edu)

## Project Summary:

Virginia Tech's Division of Information Technology seeks to a student design team to complete a system design of a Citizens Broadband Radio Service (CBRS) deployment at Virginia Tech. The student team will collaborate with engineers from Virginia Tech's network infrastructure team to explore CBRS deployment and operational models. Specific outcomes include the system design and deployment plans for two campus locations, assessment of potential operations and support models, and participation in the evaluation of CBRS products and services. Goals are to: Determine and model propagation characteristics of the CBRS frequencies for typical campus building types (academic, residential, administrative, research, etc.) and outdoor propagation characteristics including effects of weather events; Evaluate potential use cases (operational stories) based on client hardware availability or forecasted availability, such as building automation/sensors, public safety use cases, medical uses, and/or voice services; and Determine and recommend potential deployment locations (buildings and regions) based on use cases, develop operational scenarios and perform feasibility studies based on capabilities, cost and risks.

**Required Background:** Successful completion of ECE 3614 (Introduction to Communications Systems)

**Preferred Background:** Simultaneous enrollment in one or more of the following technical electives: ECE 4605-4506 (Radio Engineering), ECE 4614 (Telecommunication Networks), ECE 4634 (Digital Communications), ECE 4664 (Analog & Digital Communications Laboratory), ECE 4675 (Radio Engineering Laboratory)



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## Project Sponsor:



*Joint Project with INP  
ENSEEIHT, Toulouse,  
France*

Project Number:

9

Project Title: Evaluation of Dual Core Technology for Time and Space Partitioning Software Architecture

SME: Changwoo Min

Customer POC: pierre.morere@airbus-oneweb.com

## Project Summary:

The project will provide a demonstration of the opportunity to use dual-core technology (Cortex A9) for application based on the current AOS satellite solution using a time and space partitioning hypervisor:

- Identify process evolution for standalone application development regarding the current mono-core approach
- Specify interface between core distributed applications
- Define and provide development environment for a standalone bare application
- Define constraint on vertical integration (one application in standalone on one core)

Networking, Cybersecurity, Communications, Software Systems

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## Project Sponsor:



**UTC Aerospace Systems**

US Citizens preferred.

Project Number: **10**

Project Title: Cyber security in a multi-level, open architecture system

SME: Walid Saad

Customer POC: Ian Humphrey  
[Ian.Humphrey@utas.utc.com](mailto:Ian.Humphrey@utas.utc.com) / (978) 490-2217

## Project Summary:

This project will leverage work completed under the 2017-2018 Virginia Tech MDE project. Design and develop a secure compute system for Airborne processing nodes in a distributed processing architecture. This project includes research into secure operating systems, secure databases, and protecting data at multiple levels of security access. The main data files that will need to be stored and secured in the database will be NITF 2.1 files (National Imagery Transmission Format).

Networking, Cybersecurity, Communications, Software Systems

## 4805/6 Required Prerequisite:

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## Project Sponsor:



**UTC Aerospace Systems**

Project Number: **11**

Project Title: Visual Object Tracker (VOT) benchmarking using UAS Captive Flight System

SME: Pratap Tokekar

Customer POC: Dr. Todd Ell and Bob Rutkiewicz

Todd.Ell@utas.utc.com / (952) 892-4266, and Bob.Rutkiewicz@utas.utc.com

## Project Summary:



To properly evaluate the performance of various VOT designs a large set of pre-recorded video sequences need to be captured in relevant environments. The collection of such a benchmark dataset is an expensive and time consuming process, historically involving a manned aircraft with flight & ground crews. A low cost Unmanned Aerial System (UAS) which has the ability to carry an imager & recorder can instead be used to collect a more extensive video dataset, provided the captive flight process can be semi-automated. Modify existing Oktocopter to carry a UTAS imager & data recorder. Create/modify UAS autopilot & camera gimbal system to keep the intended target somewhere in the imagers field of view using external mechanisms, such as radio beacons or visual fiducials placed around the target.

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## Project Sponsor:



**UTC Aerospace Systems**

Project Number: **12**

Project Title: **Continuous Optical Power wireless sensor transmitter**

SME: Yizheng Zhu

Customer POC:  
Mark Bellinger / [mark.bellinger@utas.utc.com](mailto:mark.bellinger@utas.utc.com) / (802)877-4109

## Project Summary:

Create a demonstration to elevate the TRL level of the wireless Ground Fuel Quantity indicator using a simulated pressure input (Serial Data) into a circuit that is powered by an ultra-capacitor that is charged from an Optical Source. The system will provide a wireless antenna that will transmit the data to a tablet that will display the Data in a graphical interface.

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## Project Sponsor:



Project Number: **13**

Project Title: Visual recognition of farm animals utilizing quad copter drone technology

SME: Shawn Gillum (MITRE) Customer POC: Luke Lester

## Project Summary:

Protecting livestock in the presence of predators can require farmers to guard their livestock for the entirety of the night time hours. This project attempts to use quad copter drone technology to survey a field during the night distinguishing livestock (sheep) from predators (wolves). If this technology could detect a predator in the immediate area countermeasures (noises, lights, ...) could be deployed to scare off the predator. This project attempts to solve the first part of this study being surveillance and proper ID of a predator.

Machine Learning, Software Systems, Controls, Robotics and Autonomy

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## Project Sponsor:



Project Number: **14**

Project Title: Nanofabrication and Characterization of Hybrid Optical-Magnetic Nanotransducers

SME: Wei Zhou

Customer POC: Zuzana Steen

## Project Summary:

Design and create hybrid optical-magnetic nanotransducers for noninvasive nano-bio interface. Specifically, we will integrate broadband NIR optical nanoantenna with zero-remanence magnetic nanoparticle to enable nanolocalized heating by nanoscale photothermal and magnetothermal effects. If successful, these novel hybrid optical-magnetic nanotransducers will allow combined photothermal and magnetothermal stimulation of deep brain circuits in a non-surgical manner.

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## Project Sponsor:



Project Number: **15**

Project Title: How atomic layer deposition can be used for gas sensing applications.

SME: Masoud Agah

Customer POC: Zuzana Steen

## Project Summary:

Chemical and biological sensing is very important in our today's life. One of the significant development in recent advances has been the use of micro/nano technologies to create smaller, more sensitive, and higher performance sensors. To this end, many researchers have looked at material properties and micro/nano scale and studied how microscale topographical features affect the interaction of chemical and biological species with the environment. A great way to systematically create such tiny features is to use cleanroom facilities including photolithography, etching, thin film deposition, etc.

# Two Semester Major Design Experience (MDE)

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## Project Sponsor:

The logo for BAE SYSTEMS, consisting of the words 'BAE SYSTEMS' in white, bold, uppercase letters on a red rectangular background.

US Citizens preferred.

Project Number: **16**

Project Title: **FPGA System-on-Chip Algorithm Optimization**

SME: Peter Han

Customer POC: Richard Berger, [richard.w.berger@baesystems.com](mailto:richard.w.berger@baesystems.com)

## Project Summary:

The project goal is to implement signal processing algorithms into the FPGA in a variety of approaches and then benchmark the options against each other to determine the most optimal method of implementation. Consider implementing the same algorithm in different ways to be able to benchmark the alternative approaches head-to-head. This ambitious project will challenge skills in a variety of areas of software and hardware development.

Software Systems



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## Project Sponsor:



Project Number: **17**

Project Title: E911 Localization for Indoor Locations

SME: Mike Buehrer

Customer POC: VT ECE Dr. R.M. Buehrer

## Project Summary:

**Description:** In this project we will design a localization system for indoor locations using a Google Pixel. The localization algorithm will be based on pedestrian dead reckoning, trajectory-matching techniques and recently developed Simultaneous Localization and Mapping algorithms. The final prototype will be implemented on a Google Pixel smart phone and tested in Durham Hall. A target accuracy of 2m is desired for the horizontal plane along with floor estimation accuracy of approximately 95%.

**Required Skills:** Basic programming skills required. Android programming experience a plus. An understanding of basic localization techniques (e.g., GPS) also beneficial but not required.

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## Project Sponsor:



**Hume Center**

**U.S. citizenship required**

Project Number: **18**

Project Title: Extreme Doppler Communications and Processing

SME: Louis Beex

Customer POC: Jonathan Black (jonathan.black@vt.edu)

## Project Summary:

The Doppler effect is represented by a contraction/expansion of the time axis. For wideband signals the Doppler “shift” is not constant across the signal bandwidth. Basic structures for baseband Doppler (time-delay profile) processing are the Farrow filter interpolator and the polyphase interpolator performance (signal distortion, SFDR) and processing requirements depend on the fractional bandwidth processed (e.g. 45% or 90% of Nyquist frequency). Potential modifications/enhancements are over-sampling (to process a reduced fractional bandwidth) and/or a linear interpolation follow-on. **This project will design and model a high-Doppler communications network.**

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## Project Sponsor:



Project Number: **19**

Project Title: ECE Inventory

SME: Dr. Paul Plassmann

Customer POC: VT ECE

## Project Summary:

Inventory for institution can be difficult and often results in loss of assets. This system provides a robust way of constant tracking and information transparency for owners.

## 4805/6 Required Prerequisite:

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## Project Sponsor:



U.S. citizenship preferred

Project Number: 20

Project Title: Radio Frequency Performance Enhancement through Digital Processing

SME: Louis Beex

Customer POC: Michael Jones, [Michael.Jones@analog.com](mailto:Michael.Jones@analog.com), Wyatt Taylor, [Wyatt.Taylor@analog.com](mailto:Wyatt.Taylor@analog.com),

## Project Summary:

Develop an algorithm to improve a radio receiver or waveform generator performance limited by RF impairments. Examples relevant to the industry today suitable for the project include Quadrature Error Correction (QEC), Nonlinear Equalization (NLEQ), Digital Predistortion (DPD), and phased array calibrations. Other algorithms would be considered also. Follow a design flow from a study phase, simulation phase, and validation with measured data. The method to validate with measured data should be a primary consideration into the algorithm chosen to pursue. Generate a report documenting the current state of the art in the area chosen, the improvement with your algorithm, the design journey, and the final results.

Micro/ Nanosystems, RF & Microwave Systems, Software Systems,

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## Project Sponsor:



Project Number: **21**

Project Title: Wireless Remote Health Monitoring System

SME: Michael Buehrer

Customer POC: Michael Buehrer

## Project Summary:

This project will develop a wireless system to capture wireless data using a tablet from three types of health monitoring sensors including wrist-band accelerometers, smart skin, and cameras. The captured data would be stored, processed and periodically sent via cellular to health professionals. A major concern is privacy/security. Thus, the security of the link will be a major issue. The students in this project will work with professors, post docs and clinicians to design and implement a prototype wireless capture and transmission system.

Networking, Cybersecurity, Communications, Software Systems

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## Project Sponsor:



Project Number: **22**

Project Title: Mobile aerosol LIDAR

SME: Adam Barnes

Customer POC: Elena Lind, Please contact for details if Interested – [eslind@vt.edu](mailto:eslind@vt.edu)

## Project Summary:

The student team will develop a small “open-source” autonomous LIDAR to measure aerosols in the atmosphere. Instrument design will include development of coordinated software control of the laser and detector system, environment control, and data display. The team will spend 1 week at the NASA Langley Research Center for LIDAR validation. This project is a “fast track” since most of the hardware is preselected and available.

Space Systems, CONTROLS, ROBOTICS AND AUTONOMY (CRA), Software Systems

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## Project Sponsor:



**Altria**

Project Number: **23**

Project Title: Automated Collection and Processing of Machine Run-Hours

SME: Lynn Abbott

Customer POC: Brian Cramer [Walter.b.cramer@pmusa.com](mailto:Walter.b.cramer@pmusa.com)  
Alexander.Sauer@pmusa.com

## Project Summary:

Develop a system to automate the collection of run-hours from multiple pieces of manufacturing equipment. The system will make use of an existing signal on each machine that indicates when the machine is running. The system will provide a means to collect the data remotely via wireless network and put it in a spreadsheet in a predetermined format.

**4805/6 Required Prerequisite:**

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**Project Sponsor:**



**U.S. citizenship required**

Project Number: **24**

Project Title: Spectrum Interference Isolation

SME: Chris Headley

Customer POC: Brian Ventura, Scott Wiley

**Project Summary:**

The goal of the project is to identify, classify, and isolate interference signals in radio frequency (RF) spectrum data utilizing modern artificial intelligence (AI) and deep learning (DL) techniques. Project Deliverables include trained AI/DL networks that successfully identify, classify, and isolate interference signals from signals of interest in I/Q data.



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## Project Sponsor:



US Citizens preferred.

Project Number: **25**

Project Title: Reference Architecture: Navigation Reference Models

SME: William Diehl

Customer POC: Martin Beaulieu, Tim Thomas, Chris Kimmel

## Project Summary:

Develop an aircraft core avionics subsystem architectural model using CAMEO (system modeling tool). The students will work with NAVAIR to identify an Avionics system and then develop an architectural model to include use cases, requirements diagrams, functional IBD/BDDs, activity diagrams, parametric or other modeling tools. The use of system models will improve requirement interpretations, save time and allow for an in-depth analysis prior to system development.

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## Project Sponsor:



US Citizens preferred.

Project Number: **26**

Project Title: Swarming of UAVs equipped with RF Sensors

SME: Katie Hauck,  
katie.hauck@navy.mil

Customer POC: Charles Rea, charles.rea@navy.mil

## Project Summary:

A swarm of UAVs can be connected together through a meshed network to form a cognitive and coherent RF network allowing the swarm of UAVs to function as a single coherent RF sensor. Further, through the use of Software Defined Radios (SDRs), the swarm of small UAVs can be reconfigured to serve multiple RF missions such as SIGINT, ELINT, Radar, EW, Communications, Counter UAS, and pseudolites for navigation in a GPS denied environment. Investigate, design and test methods of linking multiple drones to complete a given RF mission.

## 4805/6 Required Prerequisite:

**Electrical Engineering** majors must have completed the following courses with a C- or better: 2014, 2534, and any 2 of the following courses (3105, 3204, 3304, 3614, 3704).

**Computer Engineering** majors must have completed the following courses with a C- or better: 2014, 2534, 3574 and one of the following (3204 and 3274, 3004 and 3074, 3544, 3614, 3704, 3714, 4424, 4704, CS 3214, CS 4254).

## Project Sponsor:



US Citizens preferred.

Project Number: **27**

Project Title: Unmanned Vehicle Ground Control Station

SME: Dan Stilwell

Customer POC: Andrian Jordan

## Project Summary:

Develop Requirements, Architecture, and Design a concept for GCS using at least 2 Quadcopter, autonomous aerial, robotic platforms or mixture of thereof. Build the concept of GCS to include HW/SW applications for command and control and sensor management. Develop a GUI for the operator control multiple vehicles from one display. Test the GCS to learn how to control 2 or more unmanned systems/robotics, understand system performance, discover SW/HW defects, etc. Document and analyze the results to determine future research and/or technology maturation needs.

CONTROLS, ROBOTICS AND AUTOMONY

## 4805/6 Required Prerequisite:

**Electrical Engineering** majors must have completed the following courses with a C- or better: 2014, 2534, and any 2 of the following courses (3105, 3204, 3304, 3614, 3704).

**Computer Engineering** majors must have completed the following courses with a C- or better: 2014, 2534, 3574 and one of the following (3204 and 3274, 3004 and 3074, 3544, 3614, 3704, 3714, 4424, 4704, CS 3214, CS 4254).

## Project Sponsor:



**US Citizens Required**

Project Number: **28**

Project Title: HF Broadcast Alerting and Beacons

SME: Peter Han

Customer POC: Chris Schmidt and Andy Thompson

## Project Summary:

Build a functioning software terminal and radio controller application that a high frequency (HF) station operator can use to send formatted messages (alerts) and information beacons. The formatted messages enable emergency data communications. The information beacons (one-way periodic transmissions) provide a rudimentary indication of link status and the 'reachability' of on-air stations. Analyzing this beacon data provides information with which to map functioning HF paths.

## 4805/6 Required Prerequisite:

**Electrical Engineering** majors must have completed the following courses with a C- or better: 2014, 2534, and any 2 of the following courses (3105, 3204, 3304, 3614, 3704).

**Computer Engineering** majors must have completed the following courses with a C- or better: 2014, 2534, 3574 and one of the following (3204 and 3274, 3004 and 3074, 3544, 3614, 3704, 3714, 4424, 4704, CS 3214, CS 4254).

## Project Sponsor:



Project Number: 29

Project Title: Develop a phone/tablet maintenance application

SME: William Plymale

Customer POC: Russ Proctor, russ\_proctor@beaerospace.com,  
Thao Phan, Thao\_Phan@beaerospace.com

## Project Summary:

Develop a phone/tablet maintenance application that effectively translates the error codes of the actuation system of an aircraft seat. This app should allow a field technician to wirelessly connect to the seat actuation system and quickly and efficiently troubleshoot faults. The project will involve electrical design work, wireless networking, user interface design, and web development.



## 4805/6 Required Prerequisite:

**Electrical Engineering** majors must have completed the following courses with a C- or better: 2014, 2534, and any 2 of the following courses (3105, 3204, 3304, 3614, 3704).

**Computer Engineering** majors must have completed the following courses with a C- or better: 2014, 2534, 3574 and one of the following (3204 and 3274, 3004 and 3074, 3544, 3614, 3704, 3714, 4424, 4704, CS 3214, CS 4254).

**4554: INTRODUCTION TO COMPUTER VISION**

Project Sponsor:



**UTC Aerospace Systems**

**U.S. citizenship required**

Project Number: **30**

Project Title: Advanced Technologies for Improved Inspection Processes

SME: Jia-Bin Huang (ECE)  
Joe Gabbard (ISE)

Customer POC: Pete Luksas, Arthur Blanc

## Project Summary:

The team will engage inspectors to identify challenges in current visual/manual part inspection processes. These findings will drive a proposed new process for visual/manual inspection that employs computer vision to detect potential problems with an assembly, and augmented reality to guide inspectors through the process of qualifying potential problems identified via CV. The ECE team will coordinate with an ISE senior design team.

Computer Vision, Augmented Reality

## 4805/6 Required Prerequisite:

**Electrical Engineering** majors must have completed the following courses with a C- or better: 2014, 2534, and any 2 of the following courses (3105, 3204, 3304, 3614, 3704).

**Computer Engineering** majors must have completed the following courses with a C- or better: 2014, 2534, 3574 and one of the following (3204 and 3274, 3004 and 3074, 3544, 3614, 3704, 3714, 4424, 4704, CS 3214, CS 4254).

## Project Sponsor:



DAHLGREN

**U.S. citizenship required**

Project Number: **31**

Project Title: Non-Circular Bore Scan and Mapping System

Lynda Hester, Angel Moises Iglesias, Serita Seright

SME: Alfred Wicks

Customer POC:

angel.iglesiascolon@navy.mil, lynda.hester@navy.mil, serita.seright@navy.mil,

## Project Summary:

Design and build a sensor for mapping the surface of non-circular tubes with an accuracy greater than or equal to 0.001". The data needs to be manipulated and illustrated in MATLAB to support Modeling, Simulation, Test and Evaluation of Gun Barrels.

## 4805/6 Required Prerequisite:

**Electrical Engineering** majors must have completed the following courses with a C- or better: 2014, 2534, and any 2 of the following courses (3105, 3204, 3304, 3614, 3704).

**Computer Engineering** majors must have completed the following courses with a C- or better: 2014, 2534, 3574 and one of the following (3204 and 3274, 3004 and 3074, 3544, 3614, 3704, 3714, 4424, 4704, CS 3214, CS 4254).

## Project Sponsor:



Project Number: **32**

Project Title: High Level Control of Humanoid Robots

SME: Alexander Leonessa    Customer POC: Alexander Leonessa

## Project Summary:

In the broad mission to improve quality of life, humanoid robots have a unique niche. Their capability for dexterity and intelligence enables them to perform life-critical tasks such as disaster search-and-rescue and assisting people with severe motor impairment. The DARPA Robotics Challenge (DRC) sought to promote innovation in this area by inviting teams to develop a humanoid robot that can perform disaster-response operations (drive a utility vehicle, traverse rubble, enter a building, close a valve to a leaking pipe, etc.) semi-autonomously and in real-time. With the proposed project, we aim to identify and adapt a software architecture that supports such advanced locomotion and manipulation tasks for the TREC Lab's own humanoid robot.

CONTROLS, ROBOTICS AND AUTONOMY, Software Systems



## 4805/6 Required Prerequisite:

**Electrical Engineering** majors must have completed the following courses with a C- or better: 2014, 2534, and any 2 of the following courses (3105, 3204, 3304, 3614, 3704).

**Computer Engineering** majors must have completed the following courses with a C- or better: 2014, 2534, 3574 and one of the following (3204 and 3274, 3004 and 3074, 3544, 3614, 3704, 3714, 4424, 4704, CS 3214, CS 4254).

## Project Sponsor:



Project Number: **33**

Project Title: Nasa Robotics Mining Competition(Astrobotics)

SME: William Plymale

Customer POC: Alexander Leonessa

## Project Summary:

The Nasa Robotics Mining Competition(Astrobotics) is a country wide competition. Students are to create a robot that can both autonomously and user controlled(Teleop) navigate the obstacle field. The goal is to collect as much "Mars Regolith" and dump it in the allowed area in a time limit.

We're currently looking for people to join the Software team. That also have some experience in C/C++ and possibly ROS