

THE 2019 ASME FRANCIS RHODES MONTGOMERY DESIGN COMPETITION



The 1st place Box Farm Team

The Francis Rhodes Montgomery Design Competition (FRMDC) is established in memory of Francis Rhodes Montgomery to further the field of mechanical engineering and in memory of his wife, Margaret Montgomery, who was a dedicated supporter of the competition. It is aimed at students of mechanical engineering with the goal of recognizing and regarding innovative design efforts, the practicality of the design, and the ability to present the design in a clear and understandable manner.

The competition is open to students currently enrolled in the University of Hawaii, College of Engineering, Department of Mechanical Engineering's (UH COE DME's) current school year's Senior Design Class (ME 481/482) as qualified by the course instructor.

Awards, consisting of cash prizes in amounts determined by the ASME Hawaii Senior Section in consultation with the UH COE DME will be provided for 1st, 2nd, 3rd and 4th place competitors. The judging panel consists of at least three engineers from the community as selected by the ASME Hawaii Senior Section.

The 32nd annual FRMDC was held May 3, 2019 in the Hawaii Institute of Geophysics HIG 110 auditorium on the University of Hawaii at Manoa Campus. Co-hosts Raquel Kamalu, UHM COE BSME 2018, and Jason Frifel, ASME Hawaii Senior Section Secretary, welcomed the participants and got the competition started. The event is cosponsored by the Department of Mechanical Engineering (DME), University of Hawaii at Manoa, under the leadership of Dr. A. Zachary Trimble, and the ASME Hawaii Francis R. Montgomery Foundation.

This year, the design competition featured thirteen project teams totaling 103 students. The judges were mechanical engineers from Hawaiian Electric Company (HECO) participating in honor of fellow HECO mechanical engineer Francis R. Montgomery. They included Cheyne Eugenio, Steven Kehm, Cassie Oda, and Simeon Powell. After viewing

hours of presentations and Q&A, the judges made their decision on the top four teams.

First place and \$500 went to the **Box Farm**, an indoor semi-autonomous hydroponics garden that uses a robotic system to plant, water, transfer, monitor, and harvest vegetables in an inflatable Lunar Mars Habitat greenhouse built by the University of North Dakota. This will reduce the amount of man-hours spent tending to the greenhouse.

In second place and taking the \$400 prize was the **University of Hawaii Drone Technologies – Competition Team (UHDT-C)**. UHDT-C is an interdisciplinary team composed of students from mechanical, computer, and electrical engineering from freshman to senior standing and striving to advance the application of drone technology in various areas, such as search and rescue or package delivery. The competition team is continuing the efforts of previous years and working on completing the mission set forth by the Autonomous Unmanned Vehicle Systems International Student Unmanned Aerial Systems competition.

Third place and \$300 went to the **Team Malolo (Foiling Sailing Vessel)**. Team Malolo is a new student-proposed project, focused on creating a structure that enables Laser-class sailboats to foil. The innovation of Team Malolo is to create a system that prioritizes stability over speed to bridge the gap between sailing and hydrofoiling. Careful design consideration, coupled with innovative manufacturing techniques allowed the team's performance objectives to be fully realized.

Ke Koa 'Elima O Ke Alahele or HPV team, was fourth and receiving \$200. This team of mechanical engineering students worked towards a common goal of designing a human powered vehicle (HPV) to compete at the 2019 ASME HPV Challenge. The team researched, designed, tested, and manufactured a modular recumbent tadpole tricycle to address limited storage space and maintenance problems.

Three of the judges are veteran judges having judged the competition more than once. The competition runs over five grueling hours with the judges needing to stay sharp and attentive all that time. Judge Kehm said, "The competition and competitors seem to get better each year." Cheyne Eugenio commented that



Judges: L-R: Cheyne Eugenio, Cassie Oda, Steven Kehm and Simeon Powell

the competition was enjoyable and the judging process has become pretty efficient. Yes, the judging method has improved tremendously with the efforts of the professors.

Teams are judged on the following criteria:

Content: Extent of subject interest to technical audience; Credit given to others, as appropriate and required, for material or contributions to project.

Knowledge of subject: Level of independence and originality of work; Technical vs. general subject.

Organization: Clear presentation of problem and purpose, Novel approaches to project, Background information to introduce audience to project, Logical and organized presentation, Conclusion supported by data presented.

Prototype: Model effectively demonstrates design criteria, Model fulfills project goals.

Responses to Questions: Ability to respond to technical questions, Use of technical terminology and proper English, Appropriateness of personal appearance.

The following are brief descriptions of the other nine design projects in no particular order:

University of Hawaii Advanced Balloon Satellite 6 (UHABS-6)

The purpose of the University of Hawaii Advance Balloon Satellite 6 (UHABS-6) is to provide a near-space testing environment to aid the missions of the Hawaii Space Flight Laboratory. This project will aid in those goals by developing and testing a reliable BalloonSat system that can carry a payload to high altitudes and if the payload lands on the ocean, it will autonomously propel to a designated location for recovery.

Continued on Page 5



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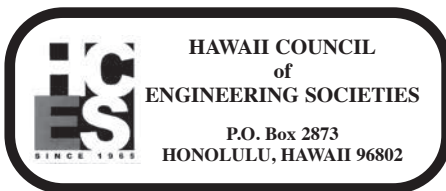
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WILIKI MAILING LIST

Additions and/or corrections to the Wiliki mailing list should indicate the proper society, institution or association. Corrections to email addresses should be submitted to your society coordinator.

HOME PAGE: hceshawaii.orgEMAIL: hcesorg@gmail.com**2018-2019 OFFICERS**

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Vice-Chair: Donna Kishi
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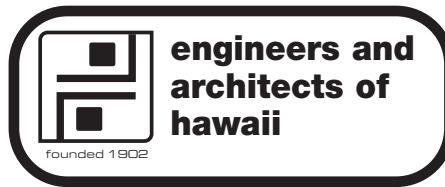
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Secretary: Kristy Kastner, PSP
Treasurer: Cristo Rojas
Dir Soc. Med.: Joseph Uno, CCP, LEED AP BD+C

Upcoming Events:

• June 7, 2019, Lunch & Learn "Lessons Learned on Integrating Linear Schedule with the CPM Schedule" Kristy Kastner, PSP, Honolulu Authority for Rapid Transportation. Encore Group Conference Room. Ms. Kastner will also be presenting this research at the



P.O. Box 1901, Honolulu, HI 96805-1901

An association for Hawaii's Engineers and Architects

WEB address: www.eahawaii.org**EAH 2018- 2019 Officers**

| | | |
|----------------|-----------------|----------|
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2019 June EAH Program

Program Chair: Sam Dannaway

Friday June 7th: Speaker: Sam Dannaway – Fire Protection Engineer – Coffman Engineers. Title: "Dole Cannery Pineapple Water Tower"

Sam will talk about the history and building of the old Dole Cannery Pineapple Water Tower which was a landmark for Iwilei for many years until its removal in the 90s during the development of Dole Cannery Square. This will be a joint meeting with the Honolulu Chapter of the Society of Fire Protection Engineers.

Friday June 14th: No Meeting

Friday June 21st: Speaker: Paul Fox – Fire Protection Training. Title: "Internal Floating Roof Storage Tank Firefighting"

Paul was the last volunteer firefighter on the Island of Oahu and was the Fire Photographer for the Honolulu Fire Dept. He was the Training Liaison Officer for the Hickam Fire Dept and was instrumental in the development of Hickam's Tank Fire Response. He is the co-founder of the ARFF Working Group, which today is the world's largest aviation fire protection organization. He presently maintains the world's largest audiovisual collection of emergency services training material. In this capac-

2019 AACE International Conference & Expo in New Orleans, LA. Congratulations Kristy!

• June 16-19, 2019 AACE International Conference & Expo.

Come out and join us, bring a colleague, spread the word and become active. Your involvement will help us locally and can help to advance your career as well.

AACE Hawaii Section, May 2019

On Friday, April 12th, 13 AACE Members visited the HART West Loch Station in Waipahu, hosted by HDCC and HART.



I-r; Chris Kanae, Patrick Watson, Maelyn Uehara, Paige Avery, Jim Ogata, Mabel Wong, Jian Zhou, Sidney Huo, Kristy Kastner, Alex Ku, Cole Yamakawa, Jeanette Roberts, Patrick Castillo

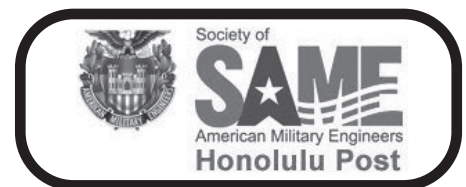
ity, he works with fire departments all over the globe in gathering and sharing training materials.

This will be the EAH annual Meeting & Election of New Officers

Friday June 28th: No Meeting

Past Meeting April 26, 2019: Speaker: Elia Herman – Senior Program Manager, Kupu – Learn, Serve, Restore. Subject: "Crittercams Record When Whales Collide" Ms. Herman gave a really excellent presentation on both dolphins and whales. She showed historical video of the old dolphin training research facility at Kewalo Basin, where her father conducted research on dolphin ability to understand language. Then she showed videos where she attached cameras to whales in an attempt to capture the actual mating of humpback whales, something that has never has been done even now.

Past Meeting April 5, 2019: Speaker: Bill Brizee – Principal AHL, Past EAH President. Subject: "Street Art Hawaii" Bill told EAH about his work helping and sponsoring Street Art Hawaii, which was created to help local artists showcase their work through neighborhood beautification projects across Oahu. Bill credited Jennifer Noel who was the organizer of the project. Through a combination of donations and private funding, Jennifer's Street Art Hawaii and Bill secured permitting, coning and supplies so that the artists were free and safe to paint traffic control boxes, light poles and walls. An initial challenge was finding artists interested in participating as many of the artists were not painting artists and many had not used the outdoor paints need on concrete and steel. Bill presented almost all the paintings and talked about each artist, their backgrounds and what their paintings portrayed.



P.O. Box 31218, Honolulu, HI 96817

Web page: www.samehonolulu.org**SAME Honolulu Officers and Directors**

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2019 SAME Honolulu Scholarship Program

Each year, SAME Honolulu offers several four- and one-year scholarships to deserving high school seniors and college students who will be or are currently enrolled at a university with an accredited engineering or architecture program. For more information on the 2019 scholarship program categories, eligibility, and scholarship application submittal requirements, download the 2019 SAME Honolulu Scholarship Application at www.samehonolulu.org. Application deadline is June 7, 2019 (postmarked). For all inquiries, email scholarship@samehonolulu.org.



2018-2019 ASCE Hawaii Section Officers

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Immediate Past Pres: Lara Karamatsu, P.E.
email: lkaramatsu@ascehawaii.org

YMF President: Nicole Nakaoka, P.E.
email: nnakaoka@ascehawaiiyymf.org

EXECUTIVE COMMITTEE MEETING

Last held: May 3, 2019
 Next meeting: June 4, 2019

ASCE HAWAII SECTION DINNER MEETING Program: T.B.D.

Check our website at ascehawaii.org for updates and an email will be sent out to membership with more information.

Speakers: T.B.D.

Date: Thursday, June 20th

Location: HASR Bistro

Time: 5:30pm Social Time
 6:30pm Dinner
 7:00 Program

Menu: Multi-entrée buffet

Cost: \$35.00 for ASCE Members
 \$40.00 for Non-Members and Guests
 \$20.00 for ASCE Student Chapter Members

COMMITTEE POSITIONS

ASCE Hawaii is looking for volunteers to fill



2018-2019 YMF Officers

Nicole Nakaoka, President
nnakaoka@ascehawaiiyymf.org

Kapiolani Street, Vice President
kstreet@ascehawaiiyymf.org

Carly Kaneko, Treasurer
ckaneko@ascehawaiiyymf.org

Claire Fukuoka, Secretary
cfukuoka@ascehawaiiyymf.org

Jordan Urabe, Past President
jurabe@ascehawaiiyymf.org

YMF June General Meeting

The next YMF general meeting is scheduled for Wednesday, June 5th, 2019 at 6:00 pm at Encore Saloon. If you are interested in attending and learning more about the various professional, social and service opportunities available through YMF, please contact YMF at ymf.hawaii@gmail.com.



the following committee positions: History & Heritage Chair, Advocacy Captain, OahuMPO and Student Practitioner Advisor. If you are interested or have questions on any of these positions, please contact President Eric Arakawa, earakawa@ascehawaii.org.

MEMBERSHIP

If you haven't already done so, please renew your ASCE membership. You can renew your membership at www.asce.org.

ASCE JOB LISTINGS

The following job listings are currently posted on the ASCE Hawaii Section website:

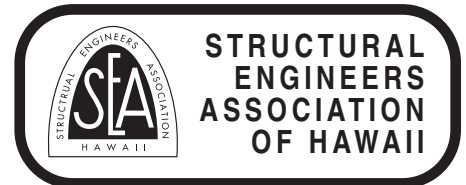
- **Booz Allen Hamilton** (Senior Civil Engineer and Wastewater Specialist)
 - **City and County of Honolulu** (Civil Engineer V (Geotechnical), Civil Engineer III, V, VII, Mechanical Engineer V)
 - **HartCrowser** (Geotechnical Engineers – Principal Level & Project Level)
 - **Kennedy/Jenks Consultants** (Project Manager, Staff Engineer for Honolulu Office and Staff Engineer for Hawaii Office)
 - **Nagamine Okawa Engineers Inc.** (Structural Engineer)
 - **PGH Wong** (Change and Claims Manager, Change and Claims Specialist, Civil/Building Inspector, Office Engineer, Scheduler)
 - **SSFM** (Civil Engineers V, Structural Engineer IV)
 - **US Army Corp of Engineers (USACOE)** (Interdisciplinary Project Manager, GS-12)
 - **Zane & Associates, LLC** (Facility Planners)
- For further information, please visit <http://www.ascehawaii.org/job-listings.html>.

**Deadline for
 Wiliki
 is June 15th**

YMF Service Project

On Saturday, May 11th, sixteen YMF members volunteered at the 27th Annual National Association of Letter Carriers (NALC) Stamp Out Hunger Food Drive at the Hawaii Foodbank. The volunteers worked hard to sort and box truckloads of donated goods.

The NALC Stamp Out Hunger Food Drive is the nation's largest single-day food drive dedicated to help families and children in need during the summer months. Hawaii residents donate nonperishable food, as well as other miscellaneous items, in blue collection bags, which are then picked up by neighborhood letter carriers. Thank you to all the volunteers who came out to support this incredible cause!



PO BOX 3348, HONOLULU, HI 96801
 Web Page URL <http://www.seaoh.org>

2019 BOD OFFICERS AND DIRECTORS

President: Kevin Nakamoto
knakamoto@ssfm.com

Vice President: Danny Fujioka
dannyf@nagamineokawa.com

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brent@iwamotoilc.com

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Regan.kobayashi@englekirk.com

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Kainoa.aki@basf.com

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jillian@mkellc.com

Director (Yr 1): Brandi Castillo
Brandi.castillo@navy.mil

Director (Yr 1): Kirk Hashimoto
kirk@ccpihawaii.com

Past President: Jeffrey Cudiamat
jcudiamat@structuralhawaii.com

PREVIOUS BOD MEETING

May 1, 2019

General Membership Meetings/Technical Seminars/Events

For all events see seaoh.org or look for email flyers for registration.

• There was a great turnout at the seminar hosted by Vector on Evaluation, Repair, and Protection of Concrete Structures. All proceeds collected are being donated to UH Manoa's Structural Engineering Lab. Thank you for your donations!

• SEAHO Convention 2019 – Dates are set for October 18-20 with the main convention activities being held at Alohilani Resort in Waikiki and the Banquet Dinner held at the Hawaii Convention Center hosted by Ashraf Habibullah of CSI. Mark your calendars and watch for the opening of registration. You won't want to miss this!

• The Annual SEAHO golf tournament is scheduled for November 1st at the Hoakalei Country Club. More details to follow.

SEAHO Young Member Group

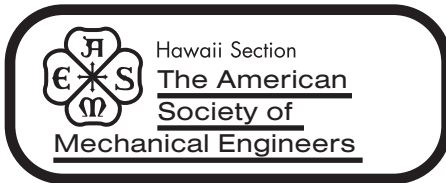
If you are a younger member interested in social activities with your peers, volunteering for outreach and community service, and opportunities for professional development, please contact Kevin Galvez at seaoh.ymg@gmail.com for more information.

New Member Applications

Paul Alicar

Next Meeting on June 5, 2019. For information, contact SEAHO President; Kevin Nakamoto knakamoto@ssfm.com

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ASME-HI 2018-2019 Officers

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| | <i>derickFPE@gmail.com</i> | |
| Secretary | Jason Frifeldt | 358-6322 |
| | <i>frifelj@yahoo.com</i> | |
| Treasurer | Kevin Dang | 737-1708 |
| | <i>dangk001@hawaii.rr.com</i> | |
| Past-Chair | Derek Sato | |
| | <i>derek.sato@hawaiianelectric.com</i> | |
| HCES Rep: | Froilan Garma | |

NEXT ASME-HAWAII GENERAL MEMBER-SHIP MEETING

Date: Date yet to be determined)

Time: from 5:30 pm to 6:45 pm

Place: Usually at Johnson Controls, 420 Waiakamilo Road (map and parking instructions found on the Hawaii Section website)

Agenda: A copy of the agenda will be on the Section website when available.

As usual, all members, students and guests are invited and encouraged to attend our meetings. There are always lots of complimentary refreshments. Please contact Chairman Froilan Garma for directions and for more information, such as parking.

CONGRATULATIONS TO THE MECHANICAL ENGINEERING GRADUATES

The school year is over and we have just completed the 32nd annual Francis R. Montgomery Design Competition (FRMDC) with the UHM Department of Mechanical Engineering (DME) and ME students. These FRMDC participants have received their BSME, congratulations! We wish them the best and success in their future endeavors. Reflecting back, ASME Hawaii Senior Section has lots to be thankful for. We are very grateful to the DME and ASME Student Section for participation in Senior Section activities.

For her very active participation, we thank outgoing ASME Student Section President Chris Li for coming out representing her fellow students to Senior Section events. Congratulations to Chris for completing her degree. Even though Chris is graduating we hope she will stay active promoting mechanical engineering. We wish her the best for her future endeavors.

In her final roll as President, Chris provided the names and email addresses for the new officers for the 2019-2020 academic year. If not done already, we will contact the new officers to be a part of the Senior Section.

We thank Dr. A. Zachary Trimble for being one of us, ASME member, and representing the DME at our events, especially for leading the FRMDC. The writer being active in the Hawaii Section since 1989, I have not seen any other DME faculty as active as Dr. Trimble has been. We have a common purpose of promoting mechanical engineering.

Thanks go out to Dr. Sangwoo Shin who has taken over as ASME Student Advisor and has continued representing the DME at Senior Section events. We appreciate his participation and look forward to hearing his reports of DME happenings.

Finally, thanks to the officers of the Senior Section, Chairman Froilan Garma, Vice-Chair Derick Kam, Treasurer Kevin Dang, Secretary Jason Frifel, Directors Raymond Liu and Ronald Flegal, and Past-Chair Derek Sato for keeping the ASME Hawaii Section active.



2019-2020 Officers

| | |
|----------------|--------------------------------------|
| President: | Scott McAdam |
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| Nat. Delegate: | Sheryl Nojima |
| | <i>snojima@grayhongnojima.com</i> |
| Deleg-at-Lrg: | Lance Manabe |
| | <i>lmanabe@fukunagaengineers.com</i> |

NEXT EXECUTIVE COMMITTEE MEETING

June 19, 2019, 11:30am, CSM Baseyard – 99-989 Iwaena St

NEXT QUARTERLY LUNCHEON MEETING

Program: Honouliuli WWTP Biogas Upgrading Facility – Richard DeGarmo

Date: Wednesday, July 10, 2019

Location: Dave & Buster's Honolulu

Time: 11:30 a.m. – Check In

11:45 a.m. - Lunch

12:15 p.m. - Program

1:00 p.m. - Adjourn

Menu: Buffet

Cost: \$20.00 for HWEA Members

\$10.00 for Students

Registration and payment on-line at: www.hwea.org.

Reservations for the luncheon meeting to Shelle Silva by Monday, July 8, 2019, by phone at 768-8763 or email at shelle.silva@honolulu.gov.

STORMWATER QUALITY BMPS WORKSHOPS

Date: July 22-26, 2019

Location: Hawaii Convention Center

More Info: <http://bit.ly/BMPworkshop>

Registration: www.HWEA.org

Topics: Permanent post-construction BMPs, erosion and sediment control BMP inspections, local case studies, permitting challenges, LID BMP pilot studies, TMDLs and drivers for LID BMP implementation.

There will be multiple training/certification courses in conjunction with this event (at additional cost).

10th BIENNIAL COLLECTION SYSTEMS CONFERENCE – CALL FOR ABSTRACTS

Date: Wednesday, November 20, 2019

Location: Koolau Ballrooms Kaneohe

Abstract Due: July 31, 2019

Send abstracts to: Tom Myers – tmyers@brwncaid.com

Submit with abstract: Title, names of speakers, authors, company/agency affiliation, address, telephone number and email address

Visit our website for list of topics: www.hwea.org

For questions/info call: Tom Myers (203-2660) or Sheryl Nojima (521-0306)

NEW STRATEGIC PLAN

The association has a new 2019-2022 Strategic Plan to guide our efforts and activities for the next three years. Please look at the plan on the website (www.hwea.org) and see how you can get involved and contribute. Contact Roger Babcock: rbabcock@hawaii.edu.



CCMAA Hawaii Chapter

<http://cmaahawaii.org>

2018-2019 Board

| | |
|------------------------|--|
| President | Ranelle Ho (SSFM) |
| Vice President | Kelly French (Jacobs) |
| Secretary | Gregg Kodama (Brett Hill Management Group) |
| Treasurer | Emily Boirum (Bowers + Kubota) |
| Chapter Past President | Brook Corney (CH2M) |

CMAA Hawaii Chapter News:

Aloha CMAA Hawaii!

CMAA mini conference was held on May 16, 2019 at Koolau Ballrooms. We were fortunate to have some great speakers including CMAA National President Andrea Rutledge. Our two scholarship recipients are Debby Sakai and Diandra Goodwin. Congratulations to the both of them!

There will be a speaker luncheon scheduled on June 21, 2019 to be held at Honolulu Community College cafeteria.

PCM class will be scheduled for August 7-9, 2019. Classes will be held at HCC. Be on the lookout for an email to register.

As shared in the past, our chapter is here as a resource for all Construction Engineering and Management professionals, and the things that we do benefit not only our CM community but our larger Ohana as well.

If you have any questions regarding any of our upcoming events, would like to join our Ohana and become more involved with the CMAA Hawaii Chapter or would simply like to be added to our email list, please email us at: hawaii.cmaa@gmail.com, or at our mailing address: CMAA Hawaii, PO Box 531, Honolulu, HI 96809

Looking for a CCM? The current listing for all Hawaii CCMs can be found here: <https://cmaanet.org/certified-construction-managers-registry>.



The 4th place Ke Koa 'Elima O Ke Alahele or HPV team

MONTGOMERY COMPETITION, from Page 1

University of Hawaii Parcel Service (UHPS)

The objective is to build an Autonomous Electric Vehicle System (AEVS), a prototype of a system capable of transporting cargo around the UHM campus footpaths using COSMOS as its operating system. The AEVS will move safely building to building without crossing any streets using wireless controls and with Level 2 autonomous driving capabilities. Various ranges of payloads will be supported.

University of Hawaii Drone Technologies – Maritime Team (UHDT-M)

The UHDT Maritime (UHDT-M) team is one of two UHDT teams this academic year. UHDT-M is working in parallel with the Applied Research Laboratory (ARL); who works on Navy critical research and development missions while also supporting STEM education at the University of Hawaii. Together with ARL, UHDT-M is working to design and manufacture a delivery system capable of delivering a payload to a maritime vessel using an unmanned aerial vehicle (UAV).

Manoa Astronomical Technologies (MAT)

Manoa Astronomical Technologies (MAT) is designing and fabricating a filter wheel for the University of Hawaii 2.2-meter telescope (UH88) telescope located on Mauna Kea to adapt to new instrumentation. It houses and allows interchangeability between a maximum of four optical filters, with one open slot reserved for calibration purposes. The filter-exchange mechanism will retain a precision of 9 μ m position repeatability with the use of kinematic couplings. The user can swap out filters manually without system disassembly as well as select a specific filter remotely via a user interface.

Na Koa 'Elima O Ke Alahele, Human Powered Vehicle (HPV)

Team Na Koa 'Elima O Ke Alahele, "The Fifth Warriors of the Road," is one of the teams participating in the Human Powered Vehicle Project. The project demonstrates the quality of the research, design, manufacturing and testing of a recumbent tadpole tricycle and the overall performance at the 2019 American Society of Mechanical Engineers Human Powered Vehicle Competition. This year's vehicle design features an emphasis on safety and stability of the vehicle during strenuous operations.

Team taSnaC (CanSat Competition)

The CanSat project involves designing,

building, and launching a can-sized satellite to compete in the CanSat Competition. The CanSat Competition is an annual, international event organized by the American Astronautical Society, with the 2019 mission being an autogyro descent system while transmitting telemetry to a ground station. Team taSnaC has designed and built a successful CanSat and has performed multiple successful functional flight tests as well as the competition mandated tests.

Hawaii Ocean Dwelling Robotics – Resident Autonomous Underwater Vehicle (RAUV) Docking System

Currently, unmanned subsea presence is conducted via costly, short deployment robotic systems, either remote controlled or autonomous. To provide a more efficient solution to ocean monitoring the Subsea Autonomous Docking Lander (SADL) was developed. The system includes a mechanical guidance system to guide a vehicle into a docked position, a secure mechanism to secure the vehicle in the docked location, and four self-leveling landing legs that can adapt to various seafloor conditions.

Rainbow Warriors Racing (SAE Formula)

The Rainbow Warrior Racing (RWR) team is a regular competitor at the Formula SAE competition, which is an annual collegiate design competition held by the Society of Automotive Engineers (SAE) where teams are tasked with designing, manufacturing, and competing in a Formula-One style vehicle against other teams from around the world. At the competition in June, the team's design endeavors will be showcased in an entirely new vehicle, aiming to perform the best in the team's history.



The 2nd place University of Hawaii Drone Technologies – Competition Team (UHDT-C)

Kanaloa

Current robot platforms are often equipped with expensive hardware, creating a high barrier of entry to the robotics field. Kanaloa aims to engineer robust unmanned aerial, surface, and underwater platforms for practical applications, in research and industry. In Fall of 2018, Kanaloa competed in AUVSI's 2018 Maritime RobotX Challenge to demonstrate competency in autonomy. In Spring of 2019, Kanaloa developed robust, modular systems on two surface vehicles for higher level autonomy development.

For more details, all of the 13 projects have a web presence at: <http://rip.eng.hawaii.edu/projects/>.

ACKNOWLEDGEMENTS

The Francis Rhodes Montgomery Design Competition was established in 1987 in memory of Francis R. Montgomery, retired Hawaiian Electric Company, Inc. Vice-President of Engineering, and one of the founders of the ASME Hawaii Senior Section, to further the field of Mechanical Engineering. This competition is also in memory of his wife, Margaret Montgomery, who was a dedicated supporter of the competition. The Hawaii Section is deeply grateful to the University of Hawaii at Manoa, Department of Mechanical Engineering, its faculty and students, for helping to perpetuate this competition. The ME 481/482 instructing Professors include Zhouyuan Song, Trevor Sorenson, and A. Zachary Trimble. Dr. Trimble is the COE's RIP Laboratory Director. RIP is for Renewable Energy-Industrial Automation-Precision Engineering, and this is where much of the project prototypes are accomplished.



The 3rd place Team Malolo (Foiling Sailing Vessel)

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