

Na Hualakai

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The Voyages

Launching Windward Community College's Aerospace Option Program

By: Dr. Joseph Ciotti

Emeritus Research Professor, Planetary Sciences

Starting Fall 2023, Windward Community College (WCC) will offer an Aerospace Option Program (AOP) designed to assist undergraduate students in the pursuit of aerospace science and engineering careers. This certificate, which was officially approved by the UHCC System in April, supports the college's existing Associate in Science in Natural Science (ASNS) degree concentrations in Physical Sciences, Engineering, and Information and Communication Technology. Students earning an Associate of Arts (AA) in Liberal Arts are also eligible for the AOP certificate. Through AOP, students may add an aerospace designation to their own major while earning an official University of Hawai'i Academic Subject Certificate that is registered on their college transcript. The AOP certificate is similar to its existing counterpart issued under the Marine Option Program (MOP).

Besides offering students a prescribed curriculum that focuses on aerospace science, the AOP certificate establishes a mechanism by which students are formally recognized at graduation and on college transcripts for the research they conducted through the Hawai'i Space Grant Consortium (HSGC) undergraduate programs. This public recognition of our students also serves as a tool for promoting HSGC and recruiting future Space Grant students.



ARLISS 2021 Extreme Altitude Hybrid Motor Launch Competition

Photo submitted by Dr. Ciotti

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The AOP certificate requires a minimum of 13 credits earned from a specified list of aerospace-related courses. A minimum of six credits must be earned in the core aerospace-related courses (astronomy, engineering and physics) and a maximum of six credits from the ancillary aerospace-related course (chemistry, geoscience and information computer science).

As a capstone, students must conduct an aerospace or engineering research project under the auspices of HSGC or similar aerospace-related granting agency. This requirement may be fulfilled in one of two ways:

- SCI 295EN: Introduction to STEM Research in Engineering (1 credit)
- SCI 295AS: Introduction to STEM Research in Aerospace Science (1 credit).

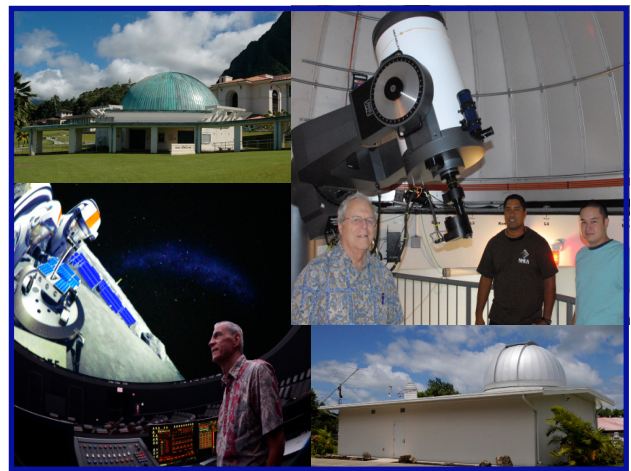
Students are required to present their project at a public venue such as the HSGC University Research Internship Symposium.



Project Imua Team Mission 2 team, that participated in the RockSat-X 2016 Mission, touring the NASA Wallops Flight, Facility in Virginia.

This AOP Certificate can serve as a pathway into University of Hawai'i at Mānoa's newly implemented Earth and Planetary Exploration Technology (EPET) Certificate as well as embellish WCC's existing articulation with UH Hilo's Astronomy BS degree.

WCC's AOP will be coordinated by the college's Center for Aerospace Education (CAE) in affiliation with HSGC. The CAE manages a complex of educational resource facilities, including a full-dome planetarium (Hokulani Imaginarium), a hands-on STEM exploratorium (Aerospace Exploration Lab), an astronomical/meteorological observatory (Lanihuli Observatory), and a high-power rocket



WCC's Lanihuli Observatory and Hōkūlani Imaginarium, where viewers can feel the immersive experience of the beginnings of the universe or witness the physics of a black hole.

and small payload development center (NASA Flight and Rocketry Lab).

Opened in 2002, WCC's NASA Flight and Rocketry Lab represents the first STEM center established in the University of Hawai'i Community College system. Equipped with a zero-drop tower, vacuum chamber, wind tunnel, flight simulators, spin-shake table to test small space payloads, and static rocket motor test facility, this lab serves as the primary research center for WCC students engaged in HSGC projects. It is also the main headquarters for Project Imua, which is a joint faculty-student enterprise of multiple UHCC campuses devoted to developing high-power rockets and small payloads for space flight. Students involved in this program have already designed and constructed four payloads that were launched into space at NASA Wallops Flight Facility in Virginia.

WCC's Lanihuli Observatory provides students with research opportunities in astronomy and meteorology by offering access to a 16-inch optical telescope, solar heliostat, log-periodic radio telescope, cosmic ray detector, and NOAA weather satellite tracking station.

Other UHCC campuses are encouraged to adopt this program as a model for their own AOP certificate. Such a collaboration would add strength to HSGC and further foster student awareness of and preparation for an aerospace career. In Hawaiian, *ao* means "enlightened" – a fitting goal for Space Grant students participating in this AO Program.



UNIVERSITY of HAWAII
WINDWARD
COMMUNITY COLLEGE

Hawai'i Space Grant Consortium



HIGHER EDUCATION

HSFL Experience

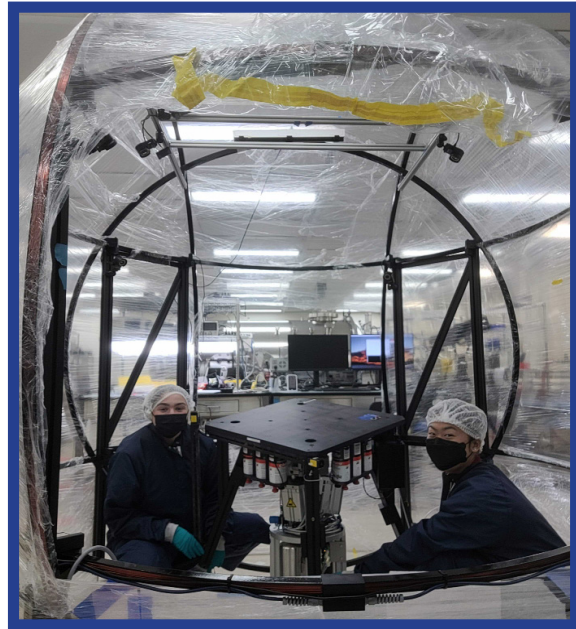
By: Kaitlyn Matsunaga & Piper Kline, HSFL Systems & Lead ADCS Engineers

We both graduated from the University of Hawai'i at Mānoa with a degree in Mechanical Engineering in the Spring 2022. During our last semester at UH, we were fortunate to be able to volunteer with the Hawai'i Space Flight Laboratory (HSFL) and then both be offered internships after graduation. Since being awarded the internships, we have worked mainly on the Hyperspectral Thermal Imager (HyTI) CubeSat. HyTI, a 6U satellite, has a mission goal of demonstrating high spectral, high spatial, and high SNR long-wave infrared imaging to be used to gather scientific data.



Piper Kline (left) and Kaitlyn Matsunaga (right) helped develop the subsystems necessary to accurately aim the camera on the HyTI satellite.

While working on HyTI, we were part of the team of engineers and students that tested the Altitude Determination and Control Subsystem (ADCS). This subsystem allows the CubeSat to be able to point accurately and without it, HyTI would not have the capability to point its camera at Earth to gather the necessary data. To test the ADCS, HSFL's state-of-the-art ADCS TestBed is used. This testbed is made up of a 3-axis and a rotary air-bearing table, a Helmholtz Cage, Sun Lamp, Earth Lamp, GPS Simulator, and a Star Field Simulator. Using all of these components, we can feed the ADCS space-like data so that it believes it's in orbit. The actuators can then rotate the CubeSat on the air-bearing to test and demonstrate its ability to point. We have also played a part in planning and documenting the Mission Operations for HyTI. A huge focus was put on how the Launch and Early Orbit Phase (LEOPs) of the mission will be functioning since this is such a critical part of the mission. During this time, communication will be established between the satellite and the ground stations as well as check-outs of all the components inside the satellite to ensure that they are still functioning for the rest of the mission.



Piper Kline (left) and Kaitlyn Matsunaga (right) working in the Altitude Determination and Control Subsystem Testbed.

Along with testing and mission operations, Piper has taken on software responsibilities. Prior to working at HSFL, she had very little software knowledge but through working with the engineers, she has been given the chance to broaden her skills to include software engineering. She is starting graduate school this Fall at the University of Hawai'i at Mānoa and will work to get her Master's Degree in Mechanical Engineering. She will continue her work on the ACS Testbed and ADCS of smallsats as she is a research assistant for Dr. Nunes. She will also continue to develop her software skills as she plans to incorporate it into her thesis project.

Kaitlyn has begun her graduate program in Mechanical Engineering here at the University of Hawai'i at Mānoa campus this fall semester. She will be working under Dr. Joseph Brown while focusing on Material Science and hopes to graduate in Spring 2025.



Hawaii Space Flight Laboratory

HAWAI‘I SPACE GRANT CONSORTIUM SUCCESS STORIES

From past recipients of the HSGC Undergraduate Program - Where are they now?

Windell Jones



Fellowship, Fall 2007 - Fall 2009

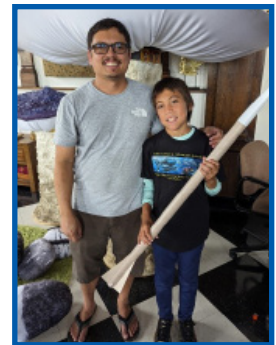
**M.S. MECHANICAL ENGINEER
INSTRUMENT ENGINEER,
CANADA-FRANCE-HAWAI‘I TELESCOPE**

“ Through HSGC, I had numerous enriching experiences beyond my regular coursework at UH Mānoa. I worked on exciting projects such as CubeSats with HSFL and lunar rovers at the NASA Ames Research Center. In 2014, I earned my BS and MS in Mechanical Engineering from UH Mānoa’s College of Engineering. My specialty is in spacecraft control with my MS degree. Space Grant played a pivotal role in the level of success I have achieved today.

Currently, I am an instrument engineer at the Canada-France-Hawai‘i Telescope

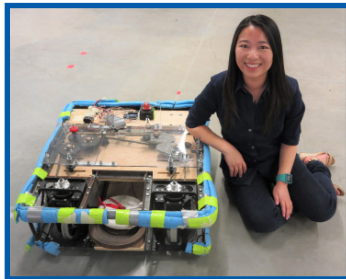
As part of the instrumentation group we are ultimately responsible for all observational instruments that goes on the telescope. I’m specifically in charge of the telescope control system and supporting other observing instruments. I also design circuits for replacing 50-year-old electronics and perform other upgrades that modernizes the telescope to keep us at the forefront of astronomy. I do work on controls in aspects of mechanical engineering and electronics engineering.

I take great pride in being a father to my 10-year-old son, Isaiah. It fills me with joy to see his passion for science and mathematics, and I’m thrilled to be able to share my own experiences and knowledge with him. I hope to be a positive influence and encourage him to explore and embrace opportunities in programs such as the Hawai‘i Space Grant Consortium. It warms my heart to envision him embarking on a path of exploration and discovery, much like the enriching experiences I had through HSGC that played a key role in shaping my career. ”



*Windell and his
10-year old son, Isaiah*

Adria Fung



*NASA AMES Intern,
Summer 2011 & Summer 2012*

**M.Ed. CURRICULUM STUDIES - STEMS²
ROBOTICS ENGINEER EDUCATION SPECIALIST,
HAWAI‘I SPACE GRANT CONSORTIUM**

“ I’ve attended multiple STEM events and one of them, I was fortunate to have met Art and Rene Kimura who introduced me to the Hawai‘i Space Grant Consortium. In the summers of 2011 and 2012, I had the opportunity to intern at the Robotics Academy in NASA Ames Research Center under the direction of NASA Civil Servant, Mr. Mark Leon. My internship focused on the development of a Camera system and Dust Reflection Shield. The Camera System is flexible enough to allow the user to switch seamlessly between Navigation mode and Recording mode. One task was to create a compression algorithm to test the software of the camera and frame grabber. The Dust Deflection

Shield is used to repel lunar dust from the camera implementing electromagnets and sacrificial lens. One task was to create a circuit design for the Electrodynamic dust shield. A commercially available IP webcam mounted on a rover testbed was used to determine teleoperation capabilities with two Linux-based computers connected via Ethernet mimicking a lossy environment.

Working with Art and Rene Kimura by volunteering at various Space Grant events including robotics competitions and Lacy Veach Day allowed me to connect with other like-minded educators and also be able to provide opportunities for my students as an educator. I like to be able to give students opportunities to explore STEM fields, while also applying their knowledge to real-world projects. Having gone through the Space Grant program as a student and volunteer allowed me to shape my vision for robotics education in Hawai‘i. ”

UH Mānoa Research Interns: Fall 2022 - Summer 2023



Ashten Akemoto, a junior in computer engineering, worked with mentor Dr. Frances Zhu of the Hawai'i Institute of Geophysics and Planetology department. The research focused on the development of Robotics Operating System (ROS) middleware for the

Fall 2022 - Spring 2023 advancement of machine learning in future lunar module exploration systems. Through software like Gazebo and Open Dynamics Engine (ODE), a lunar world environment can be generated for simulations.



Matthew Madayag, a junior in mechanical engineering, under mentorship from Dr. Miguel Nunes of the Hawai'i Institute of Geophysics and Planetology continued his research focus on the mechanical aspect of developing a space-based coronagraph. His project was a

Fall 2022 - Spring 2023 collaborative effort between Institute for Astronomy (IFA) and the Hawai'i Space Flight Laboratory (HSFL) in analyzing the radiation and solar winds produced in the ever changing plasma and ionized gas of the sun's corona.



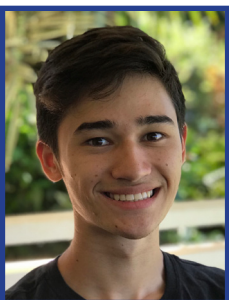
Aláine Lee, a sophomore studying Astrophysics under the mentorship of Dr. Duncan Farah of the Department of Physics & Astronomy. Her research focused on the NASA space-based far-infrared mission called Space Interferometer for Cosmic Evolution (SPICE) that

Fall 2022 aims to improve prior far-infrared observatories. Her research entailed analyzing the SPICE mission's capacity to recover starburst and active galactic nuclei (AGN) parameters such as luminosities, star formation rates, and black hole accretion rates within infrared-luminous galaxies.



Stephen Gulley, a senior in astrophysics and mathematics, with mentorship from Dr. Kevin Croker of the Department of Physics and Astronomy, utilized modern Laser Interferometer Gravitational-Wave Observatory (LIGO) data in order to study anomalies occurring at black

Fall 2022 - Spring 2023 hole mergers. His study shows considerable merit of discovering anomalies of black hole mergers that are further observed through simulations of binary star systems and black hole development.



Hershel Weiner, a junior studying astrophysics, continued his research under Dr. Phillip von Doetinchem of the Department of Physics & Astronomy. His project focused on the exploration of the unknown area and secondary particle fluxes created by the collisions of

Fall 2022 cosmic rays in the General AntiParticle Spectrometer (GAPS) that launched in late 2022 to probe an undetected channel of dark matter.



Savannah Dubois, a junior majoring in Mechanical Engineering with a focus in Aerospace, started her research in designing a gamma ray spectrometer for future space missions to the Moon and Mars. Her mentor is Dr. Peter Englert of the Hawai'i Institute of Geophysics and

Summer 2023 Planetology. Her project focuses on detectors that accurately measure radioactive elements and ratios to understand the geological properties of celestial bodies. Small detectors placed on landers will provide efficient measurements for discovered Uranium and Thorium decay products and exploring the possibility of detecting hydrogen and water.

UH Mānoa Research Intern (continued)



Bret Witt, a junior in computer science, mentored by Dr. Frances Zhu of the Hawai'i Institute of Geophysics and Planetology, completed his work in designing a Neural Network-based system. The designated system allows rovers to utilize sensor data to identify terrain characteristics and analyze soil interactions with the rover's wheels to draw conclusions about its properties.

Fall 2022

UH Mānoa Trainee Intern



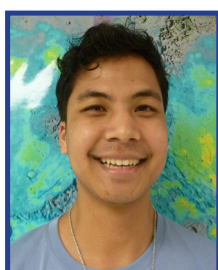
Jennifer Nakano, a junior in computer science, worked under Dr. Frances Zhu of the Hawai'i Institute of Geophysics and Planetology. Her research was on the development of a Gaussian Process Active Learning (GPAL) algorithm tested on a variety of planetary analogues and on local real-world, surface terrains. Implementing these algorithms continues the development of artificial intelligence (AI) for navigational purpose in robotic systems preventing unnecessary risk to human life on future space missions.

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UH Mānoa Group Research Interns: Spring 2023 (CREPES Team)



Sapphira Akins



Christopher Freitas



Matthew Paulino



Howin Ma



Ryan Taylor

"**Cubesat Relativistic Electron and Proton Energy Separator (CREPES) mission**" is a student-driven project derived from the University of Hawai'i at Mānoa's Earth and Planetary Exploration Technology (EPET) course that aims to utilize a 1U CubeSat carrying a set of silicon and gas electron multiplier (GEM) detectors to collect Solar Energetic Particle data. With this Solar Energetic Particle (SEP) data, the team located flux and energy density of the solar ejecta to better understand solar modulation and its role in accelerating and transporting solar energetic particles.

UH Mānoa Group Research Interns: Fall 2022 - Summer 2023 (VIA-SEES Team)



Nalu Clemons
Fall 2023



James Crawford
Spring 2023



Matthew Leonard
Fall 2022 -
Spring 2023



Stephen Devis
Fall 2022 -
Spring 2023



Glen Miguel-
Matsumoto
Fall 2022 -
Spring 2023



Nikola Mazzarella
Summer 2023

"**Variability in Atmosphere due to Solar Energetic Events**" also known as "**VIA-SEES**," is a CubeSat mission that intended to act as a joint science and technology mission. The continuing project is student-led under the support of the Earth and Planetary Exploration Technologies (EPET) program at the University of Hawai'i at Mānoa. The VIA detector development activities include the development of a spectrometer testbed, generating spectral reference data, and preparing scientific data acquisition from Low Earth Orbit. The team is able to study Solar Energetic Electrons, Nitrous Oxide, and Ozone concentration concurrently and after a solar event in order to study the degradation effects on Earth's atmosphere.

Kapi'olani CC Trainee Interns: Fall 2022 - Spring 2023



Jenny Brown, a junior at Kapi'olani Community College majoring in natural science with a concentration in engineering, researched on the formation of galaxies in Super Cluster Phoenix around Super Massive Black Hole in central galaxy Phoenix A. Dr. Radovan Milincic helped mentor her project

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along with assistance from NASA's High Energy Astrophysics Science Archive Research Center (HEASARC). Data gathered was used to gain insight in the evolution of relative abundance of different types of galaxies as the distance from the black hole increases.



Michelle Bolanos, a junior majoring in physics at Kapi'olani Community College, mentored by Dr. Radovan Milincic of the Department of Physics. Data was gathered on the density profile of Super Massive Black Hole S5 0014+81 in order to determine its

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origins. Another objective of the researcher's project was to create a more efficient and accurate software for determining these density profiles.



Casper MacDhonnail-Rurickovich, a sophomore in astrophysics at Kapi'olani Community College, studied the limitation of black hole mass produced in the collapse of a massive star under the mentorship of Dr. Radovan Milincic of the Department of Physics. Relative

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to the Cosmic Microwave Background (CMB) radiation energy absorbed and the Hawking radiation emitted, the maximum size limit of the black hole that evaporated through the Hawking Radiation could be analyzed.

The CanSat Competition is an annual student design-build-launch competition for space-related topics organized by the American Astronautical Society (AAS). The CanSat project's purpose was to explore the use of auto gyro descent control of a science payload when released from a launch vehicle that transmits data to a base station.

UH Hilo Research Interns: Spring 2023



Edward Ward, a junior in astronomy, focused on the exploration of star-forming regions and their physical properties under the guidance of Dr. Marianne Takamiya, a Professor and Co-Chair from the University of Hilo's Physics, Astronomy, Natural and Health Sciences. Analysis of spectral data collected from the

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observations of star-forming regions, like star formation rate (SFR), magnitude of extinction, and chemical abundance, provided for a more accurate groundwork to better examine the evolution of stars in the universe.



Koji Miyakawa, a sophomore in astronomy and physics, begun his research utilizing the Hyper Surpime-Cam Subaru Strategic Program (HSC-SSP) to identify proto-clusters of galaxies that are billion of years old. With mentorship from Dr. Yusei Koyama, an Assistant

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Professor at Subaru Telescope, his project further advanced NASA's strategic goal of understanding space between stars in the galaxy and the universe beyond.

UH Maui CC Trainee Interns: Spring 2023 (CanSat Team)



(Standing from left to right) Angelic Juraez, Christian Falcon, & Joe Vincent Yuro
(Sitting from left to right) Justin Lucas Bio & Christian Yadao

Honolulu CC Trainee Interns First Nations Launch: Fall 2022 - Spring 2023



(Left to Right) Ms. Helen Rapozo, Caleb Yuen, D'Elle Martin, Angello Portillo, & Dr. Shidong Kan

The 2023 First Nations Launch was held at the end of April at Kenosha, Wisconsin, and featured students from Honolulu and Windward Community Colleges Project Imua Mission 12 team. The 2023 Gateway Challenge required teams of students to create a dual deploy high-power rocket that can reach an apogee of 2500 feet above ground level. Students under the mentorship and guidance of Dr. Shidong Kan and Ms. Helen Rapozo developed a dual deploy rocket, Super DX3, RRC3 and Telemega GPS avionics subsystems for their rocket. Similar to other standard NASA projects, the Project Imua Mission 12 team followed the critical design phases by succeeding in passing all the required design reviews as well as the Flight Readiness portion, where drop tests, black powder deployment, and flight tests were conducted.

Windward CC Trainee Interns Project IMUA Mission 12: Spring 2023



(Left to Right) Anya Dimitrijevic, Hau'oli O'Brien, Aden Bauda, Moises Alhambra, & Nikki Arakawa

One of the most recent undertakings of Windward Community College's participation in the Friends of Amateur Rocketry (FAR) and Arliss competition. With previous experience from past years in both of the competitions, Project Imua Mission 12 aimed to gain experience on their new hybrid-motor rocket and further developed their ground safety protocols. Additionally, the team improved on previous team's autonomous rover designs with atmospheric sensors along with a recent addition of an autonomous air vehicle.

University of Guam Interns: Spring 2023 (UoG Drone Corps)



(Left to Right) Thomas Torres II, Pretenciana Tiara Rosario, Wendy Fejeran, Shian Marie Borja Aricheta, Daniel Ramos, Sarai Verga, Phil Joanne De Jesus, Dr. Leslie Aquino, Dr. Romina King, Frank Lujan, Motusaga Vaeoso, D'amy Steward, Pei Andriel Valerio, and Emmanuel Carino (2cofly Instructor)

Alongside the NASA Guam Established Program to Stimulate Competitive Research (EPSCoR), NASA Guam Space Grant has co-administered the University of Guam Drones Corps, a capacity-building program that aims to build technical capacity for drone services on the island by creating a cadre of Federal Aviation Administration licensed, informed, and responsible remote pilots. The program collectively has 24 licensed remote pilots from its first and second cohorts with over 1141 flight hours logged as of July 2022. With the third cohort of 12 pilots, currently attending the program's Knowledge Course hosted by their partners at 2cofly.

The University of Guam continued its annual Research Symposium featuring both in-person and virtual components as a pre-conference event to the 2023 Conference on Island Sustainability. The event allows students to showcase their latest research updates and internship experiences.



Former URI Interns **Jonelle Sayama** and **James Pangelinan** (pictured on the left) who are both graduates of the program were able to present their research projects on the statistical modeling of extreme precipitation processes within the Pacific Islands' regions. They used General Climate Models and mapping tools to study the effects of sea level rise on Guam's Mangrove Forests utilizing unmanned aerial vehicles for 3D mapping.

After the devastating impact of Typhoon Mawar on May 24, the University of Guam, in partnership with the National Weather Service Guam, initiated an effort to map the storm's damage to the natural and built environment. Remote pilots from various UOG programs, including the Drone Corps, NASA Guam Space Grant, NASA Guam EPSCoR, and the Pacific Islands Climate Adaptation Science Center, conducted assessments from May 27 to June 8 collecting data during this endeavor. It enabled meteorologists to make detailed analyses of the typhoon's winds and coastal inundation, contributing to a better understanding of such events.



Jonelle Sayama & James Pangelinan

◦ Rocket Payload System Design ◦

By: University of Hawai'i at Maui College - CanSat Team



(Left to Right) Justin Lucas Bio, Christian Yadao, Christian Falcon, Angelic Juraz, Joe Vincent Yuro, & Dr. Jung Park

At the 2023 CANSAT Competition, hundreds of universities around the world were challenged in designing and creating a rocket payload that can collect sensor data during flight and be able to launch 725 meters off of the ground. The University of Hawai'i at Maui (UHM) College's Electronic and Computer Engineering Technology (ECET) program undertook the task of following the rigorous structure and design phases of a typical NASA project with Preliminary Design Review, Critical Design Review, Flight Readiness Review, Launch Operations, and Post Flight Review. After the completion of the Preliminary Design Review, the top 40 teams were selected from twenty of the best United States' Universities and twenty on an international scale to get a chance at launching their rocket.

The UHMCCanSat team was comprised of five students, **Christian Falcon, Angelica Juarez, Joe Vincent Yuro, Christian Yadao, and Justin Lucas Bio**. After being selected as one of the United States' teams, the UHMC team got started on each individual subsystem for the rocket.

“You learn things you wouldn't learn in a classroom, only through hands-on experience. Through designing, building and testing our CanSat, it taught us the importance of technical proficiency and soft skills in a real engineering setting.”

-- Christian Yadao, Mechanic of UHMC CanSat

The rocket's functions were subdivided into 6 different subsystems for better project management: sensor, descent control, mechanical, flight software, electrical power, and ground control station. With a finished prototype and the onerous work placed into this collaborative project, it was time to see the team's hard work paid off on launch day where their work was being judged based on each critical design phase.

From June 6-12 at Virginia Tech in Blacksburg, Virginia, the UHMC CanSat students witnessed as they placed 27 out of 40 teams chosen in this rigorous competition. Great job UHMC CanSat Team!

“Although we might not have won the competition, the CanSat competition has been a wonderful, inspiring experience that we have learned many valuable lessons in multiple aspects of engineering, such as programming, electronics design, and mechanical engineering. We created a working flight-ready payload that was launched in a rocket. I have seen myself and my team grow from not knowing much about any field of engineering required for this competition to using the ECET programs' teachings to create a working CanSat.”

-- Christian Falcon, Team Lead of UHMC CanSat

HSGC URI Research Internship Experience

By: Matthew Madayag, Research Intern, UH Mānoa

As a Hawai'i Space Grant Consortium (HSGC) Research Intern, I have gained valuable experience in the STEM field. This internship has allowed me the opportunity of working closely with engineers, Dr. Miguel Nunes and Yosef Ben Gershom, from the Hawai'i Space Flight Laboratory (HSFL) and scientists, Dr. Shadia Habbal and Dr. Adalbert Ding, from the Institute for Astronomy (IfA). I started as a trainee intern in the summer and became a research intern in the Fall 2022 term. Dr. Nunes and Yosef guided two others and myself on tasks for developing a space-based coronagraph. We collaborated with Dr. Habbal and Dr. Ding on a design for lab testing an instrument then created an outdoor setup for further testing at the IfA.



Matthew Madayag describing how the instrument works with Dr. Adalbert Ding on the lab version of the coronagraph at the Institute for Astronomy.

In the summer and fall 2023 terms, I learned various roles from project managing, systems engineering, and CADing. As project manager for the team of three research interns I coordinated between our mentors, principal investigators, and ourselves to deliver satisfactory results. I started creating a list of requirements for the instrument to meet desired specifications to achieve mission success. We created physical and computer aided design (CAD) models based on Dr. Ding's ground-based instrument. Iterating CAD models as Dr. Ding further developed the ground-based instrument design. Soon after we began on conceptual designs for the space-based coronagraph. I took the ground-based instrument design and inserted it into HawaiiSat, a spacecraft developed by HSFL. Then iterating the design to better fit the

spacecraft by adjusting instrument dimensions and size of the structure.

Currently, under Dr. Peter Englert, my job has narrowed down to developing the boom for the coronagraph. This semester's goal is to settle on a design for a structural component which deploys to hold an optical occulter away from the spacecraft. So far, I have researched various designs including elastic memory composite and telescopic tubular choices. Then, I shall conduct a trade study comparing the different designs and iterating them for the most optimal choice for the task.



(Left to Right) Software lead Matthew Leonard, Mechanical lead Matthew Paulino, and Project Manager Matthew Madayag dressing up to prepare to head into the cleanroom to meet with Dr. Miguel Nunes.

Dr. Adalbert Ding calibrating the lab instrument for outdoor testing of the occulter and tripod sun tracker.



I plan on continuing my studies as a Mechanical Engineer with the Aerospace concentration in the Earth Planetary Exploration and Technologies (EPET) Program. Applying for more internships to build a solid foundation as a launch pad into the Aerospace field. The HSGC has granted me an opportunity to experience working with engineers and scientists first hand and has inspired me to continue to pursue a career as an engineer.



GRADUATE PROGRAM

Connecting Aerospace to Earth Science

By: *Krystal Arroyo-Flores, Former HSFL Employee*



Krystal Arroyo-Flores

My name is Krystal Arroyo-Flores and I am a Master’s student in the Department of Earth Sciences and the Hawai’i Institute of Geophysics and Planetology (HIGP) in the University of Hawai’i at Mānoa, School of Ocean and Earth Science and Technology (SOEST). Before joining the MS program, I worked for the Hawai’i Space Flight Laboratory (HSFL) in the spring and summer of 2021 as a member of the Attitude Determination and Control Systems (ADCS) team for the Hyperspectral Thermal Imager (HyTI) CubeSat mission. I conducted functional testing of the ADCS components and integrated subsystem, as well as of the various capabilities of the state-of-the-art ADCS Test Facility. I worked to validate the testbed magnetic field generator, sun simulator, and motion capture system, which would be used later for ADCS modes testing. Outside of HyTI, I was also one of the many HSFL team members who monitored passes for the previously launched Neutron-1 CubeSat mission.

Thanks to my time with HSFL, I developed invaluable relationships with Dr. Miguel Nuñez, Dr. Frances Zhu, and Dr. Rob Wright, among others. These connections proved to be critical to me when making the transition from post-baccalaureate student/employee to graduate student, and contributed to my having the opportunity to continue working with Dr. Zhu by joining her Robotic Space Exploration (RoSE) Lab.



Krystal (Right) and Ethan Ariyoshi testing the Sun Simulator

My current MS project is supported by a NASA EPSCoR (Established Program to Stimulate Competitive Research) award granted to Dr. Zhu to develop autonomous rover operations for planetary surface exploration. The first year of my research focused on developing an experimental campaign and designing a sensor suite to characterize and validate Hawaiian field sites as planetary surface analogues for the Lunar South Pole. The main instrument is a visible and near-infrared (VNIR) field spectrometer provided by Dr. Shuai Li (also of HIGP). My sensor suite design incorporates the spectrometer with additional sensors in a configuration meant to facilitate field testing with a human operator (me): the suite doubles as a sort of hiking staff, providing physical support as well as maintaining constant measurement angles for the sensors. In developing the campaign, I worked with Dr. Christian Andersen of UH Hilo to identify potential field sites on the Big Island and make the arrangements for our first data-gathering trip, which took place in April 2023. I am now working with Dr. Hao Wang (RoSE Lab postdoctoral researcher) to analyze all of our sensor data, the results of which we aim to present this fall. We also plan to return to the Big Island for additional data-gathering trips in the future.



Krystal (Far right) and Dr. Wang take spectral measurements on Mauna Kea, while Nina de Castro (HIGP PhD candidate) records sample characteristics

Although short-lived, my position with HSFL let me continue to use my engineering skills and become familiar with resources available at UH, which came in useful while building my sensor suite. Thanks to this opportunity, I was able to pivot successfully from satellite integration and testing to designing and testing instrumentation for a specific science mission, linking my previous experience in aerospace engineering to my new role in planetary science.

K-12 EDUCATION

Astronaut Lacy Veach Day of Discovery

By: Adria Fung, HSGC
Robotics Engineer Education Specialist



[Left to Right] Colton Ching (Senior Vice President of HECO), Nainoa Thompson (President of Polynesian Voyaging Society), Diana Barcena (the late Lacy Veach's sister), & Art Kimura (former HSGC Education Specialist)

The Astronaut Lacy Veach Day of Discovery was initiated in 2002, with initial and sustaining grant funding from Hawaiian Electric, in partnership with Punahou School for 17 years, with Kamehameha Schools Kapālama for 2019, virtually in 2020 and 2021, and the Hawai'i Space Grant Consortium, as a tribute to the legacy of the late Lacy Veach. The goal is to honor explorers and exploration, past and present, to provide a venue for organizations and individuals in Hawai'i to share their science, technology and education activities, and to foster an environment of learning for children and their parents, catalyzing further interest in science and technology and recognizing the contributions of many organizations who offer employment in these disciplines. As important, the Astronaut Lacy Veach Day of Discovery has



Welcoming ceremony of the 21st Annual Lacy Veach Day of Discovery event. (Left) Colton Ching, Senior Vice President of Planning and Technology for Hawaiian Electric & (Right) Kamuela Binkie, Vice Principal Kula Waena of Kamehameha Schools, Kapālama.

served as a catalyst for organizations and individuals with science and technology interests to come together to share with the general community their research and other work.

The 21st annual Astronaut Lacy Veach Day returned to a live, in-person event on Saturday, October 29, 2022 at Kamehameha Schools, Kapālama. The event featured 21 workshop offerings, welcome messages from Hawaiian Electric and Kamehameha Schools, Kapālama, and keynote by Master Navigator Nainoa Thompson.



Nainoa Thompson, President of the Polynesian Voyaging Society and featured guest Keynote speaker, interviewed by KHON2 News.

There were a total of 400 registered participants and 150 volunteers. Registration began in early September and filled within 10 days. Participants registered after were encouraged and provided information to come on-site for walk-on registration from cancelled and no-show participants. Pre-service and in-service teachers were among those who attended as participants and took part in hands-on activities. Various schools attended as a group with students and accompanying teachers. These included Nānāikapono Elementary, Pearl City Elementary, and August Ahrens Elementary.



Past, Present and Future of Polynesian Canoe Voyaging workshop hosted by Captain and Educator, Mark Ellis.

Workshop presenters included Presidential Awardees in Excellence in Teaching, Polynesian Voyaging Society Captain Mark Ellis, Hawaiian Electric employees/volunteers, UH Mānoa College of Education Teacher Candidates, and faculty from Chaminade University and University of Hawai'i System, and more.



Roger Kwok presenting his gravitational challenge workshop called "Keeping the Balance" with assistance former HSGC student assistant, Nicole Hatae.



STEM Magic show provided by Society of American Magicians Roger Kwok from Leeward Community College and Richard Jones from the University of Hawai'i West O'ahu campus.

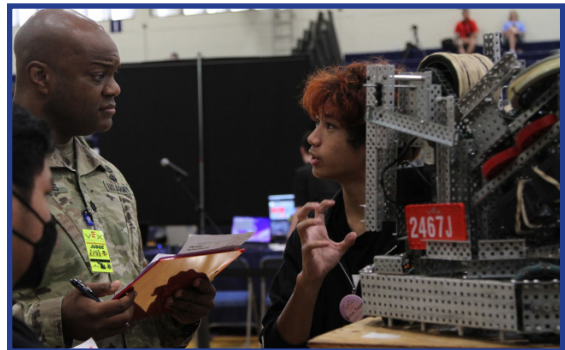


Lacy Veach, NASA Astronaut photo
Credit: NASA



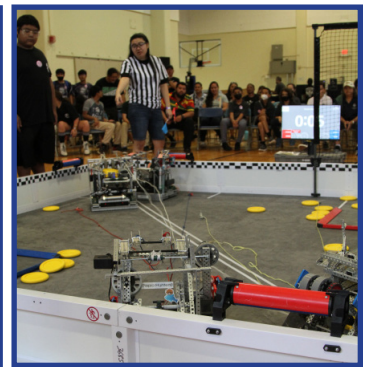
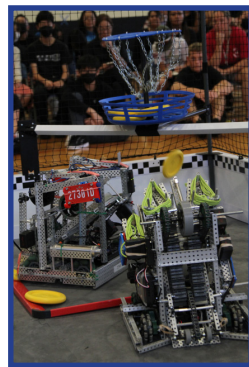
2023 Hawai'i VEX Robotics State Championships

By: Adria Fung, HSGC Robotics Engineer Education Specialist



The 2022-2023 season transitioned back to full in-person events with no limit on capacity and allowed spectators to enjoy a competitive sport for middle school participants. There were a total of 153 VEX IQ and 98 VRC registered teams in Hawai'i. The season also saw a total of 40 events across O'ahu, Hawai'i Island, Maui, and Moloka'i including qualifying tournaments, scrimmages, and the four State Championships.

- January 28, 2023 - Hawai'i VEX IQ Elementary School State Championships at Hanalani Schools
- February 4, 2023 - Hawai'i VEX IQ Middle School State Championships at University of Hawai'i, Hilo
- February 19-20, 2023 - Hawai'i VRC Middle School State Championships at Kamehameha Schools, Kāpalama
- February 19-20, 2023 - Hawai'i VRC High School State Championships at Kamehameha Schools, Kāpalama





Mahalo to all the mentors and volunteers!



Ron "Ka'imi" Nahale-a of University of Hilo Intermediate School winning mentor of the year at Hawai'i VEX IQ Middle School State Championships



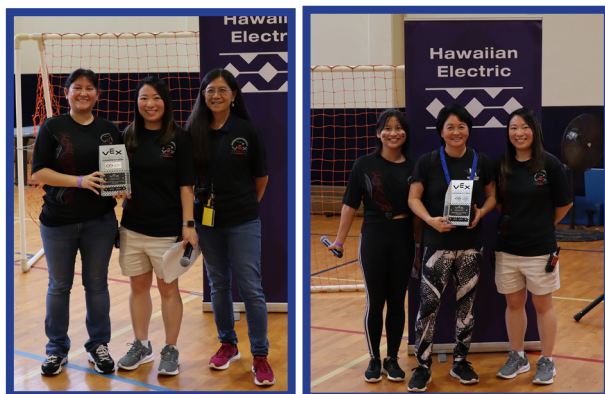
Jon Kitagawa and Gayle Kamei, teachers and mentors from Waiākea Intermediate School, receive Partner of the year award at Hawai'i VEX IQ Middle School State Championships



Brandon Teshima, Robotics Coach, and the students of Kamehameha Schools, Kāpalama awarded with Volunteer of the Year Award



Andrea Reyes, teacher and mentor at Gus Webling Elementary School, receives Mentor of the Year Award at the Hawai'i VEX IQ Elementary School State Championships



Elena Brown (left) accepting the Volunteer of the Year award and Linda Wong (right) accepting the Mentor of the Year award at the Hawai'i VRC Middle School State Championships



Joshua Arant (left) of Waianae High School winning Mentor of the Year Award and Alex Meneses, former HSGC student staff, received the Volunteer of the Year Award at the Hawai'i VRC High School State Championships

Coding Starts Early With Robotics at UH Mānoa's College of Education

By: *Adria Fung, HSGC Robotics Engineer Education Specialist*

UH Mānoa College of Education (COE) Assistant Professors Aaron Sickel and Stacy George collaborated with Robotics Education Specialist, Adria Fung, from the Hawai'i Space Grant Consortium to host a professional development experience for elementary teacher candidates.

In the Summer of 2022, the program, Bot BuildersCode Camp (B2C2), provided participants with an introduction to robotics, engineering design, and coding. For one week in July, 16 participants worked together on the COE campus on a range of tasks using VEX robotics kits. They applied engineering principles to build a simulated spaceship, a supercar, and a rover, which they learned to code to perform the types of tasks that occur in NASA missions. The teachers also learned how to integrate these lessons into multiple content areas of the elementary curriculum and will have the opportunity to use the kits with their students.

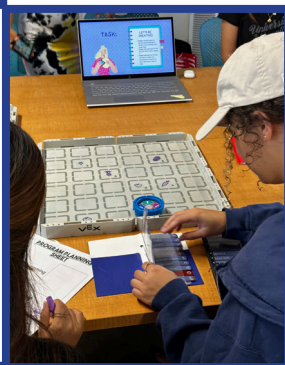


Super car made out of a simple VEX robotics kit ready to race



(Top photo) Simulation of a rover mission, where educators had to use line coding in order to retrieve samples that will be brought back to base

(Middle photo) Teachers visualizing robot movement for efficient maneuverability in picking up designated fruits and vegetables.



(Bottom photo) Successful completion of a rover sample collection

Throughout the Fall 2022 and Spring 2023 semesters, Adria was invited to present and lead a workshop with elementary teacher candidates on a robotics education framework, focusing on teaching computer science through a hands-on robotics project. These workshops enabled educators to take any content from their curriculum (ex. English, math, social studies, etc.) and integrate it into application through computer science and robotics. The teacher candidates learned how to use VEX 123 robots and completed activities such as solving math problems and coding their robot to collect a Mars sample. The teacher candidates were also encouraged to develop their own mini-lesson and share it with their cohort.

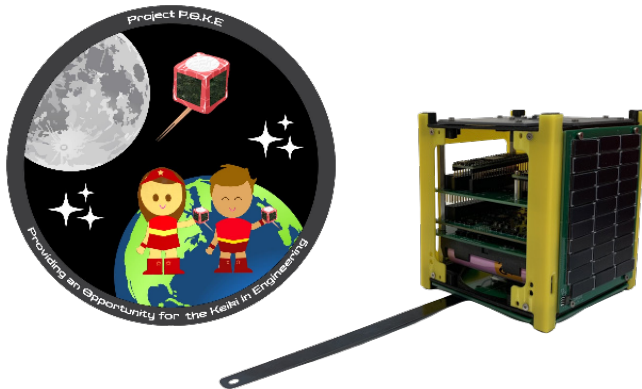
With the rollout of Computer Science standards in Hawai'i public schools, providing educators with a hands-on approach to teaching computer science will help to engage students to understanding computer science and computational thinking on a much deeper level.



Stacy George (first-row, center), Adria Fung (first row, second from the right), Aaron Sickel (first row, Far-right), and rest of College of Education participants after completing the one-week B2C2 Camp.

Project POKE: Bringing Satellites to K-12 Schools in Hawai‘i

By: Amber Imai-Hong, HSFL Engineer, UH Mānoa



Project POKE emblem designed by Ethan Kimura and the Artemis 1U CubeSat Kit designed for keiki in Hawai‘i.

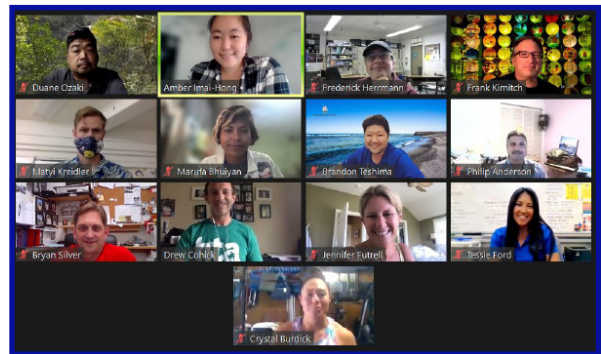
In Spring 2021, COVID continued to cause major disruptions to everyday life in Hawai‘i and around the world, including in education. When Art Kimura, retired Hawai‘i Space Grant Consortium (HSGC) Outreach Specialist, reached out to the Artemis Team about the Governor’s Emergency Education Relief Grant that would fund innovative teaching methods for up to \$500,000 over the course of one year, we felt it was a great opportunity to expand the Artemis kit for use with middle and high school students and their teachers.

The proposal: provide a unique opportunity for keiki in Hawai‘i to gain hands-on aerospace experience by leveraging the Artemis 1U CubeSat Kit. Educators sign up for a 3 credit online spacecraft mission design course through the University of Hawai‘i Outreach College where they would learn the technical aspects of satellite and spacecraft mission design. Students learn about the hardware and software provided, and at the end of the Spring 2022 semester, students present their mission idea to STEM professionals from their communities and receive feedback on their mission design. This helps to meet NASA’s strategic goal of inspiring students to address national challenges. It also prepares Hawai‘i students for a career in STEM, which is a key goal of HSGC.

The team was one of 34 teams to receive funding and one of three teams to receive the maximum funding of nearly \$450,000 which paved the way for Project POKE (Providing an Opportunity for Keiki in Engineering) to begin. Teachers were primarily recruited from the Hawai‘i Space Grant network of teachers, scholastic robotics, and word of mouth.

Project POKE gives students the opportunity to see how their ideas can transform into reality by asking students to identify an issue affecting their community and develop a mission that uses the CubeSat to study the problem. The goal of this is to have students recognize their capability in impacting and changing the world.

At the end of the Project POKE program, a culminating symposium was held. HSGC Director, Dr Luke Flynn, gave a brief introduction to participating teachers and students, then over 200 students presented their design concept to STEM professionals from their communities. Many of the STEM professionals were also from the HSGC network, either through robotics or HSGC University Research Internship Alumnus. One student participant said, *“Having the opportunity to work on this project was a great experience... the project itself was very enjoyable and I see real promise in the future for the idea the group came up with. This project has taught me that ideas can have real-world applications.”* Another student shared that the project changed their whole career trajectory, and they are working towards getting involved with the aerospace industry after graduation from a Mechanical Engineering degree program.



Educator Course for teachers of various grade levels across the State of Hawai‘i attending a zoom meeting with Amber Imai-Hong.

The Artemis CubeSat Kit team hopes to bring back Project POKE. After delivering 7 Artemis kits to universities across the continental US, the project team tested the kit on middle and high school students to find what elements of the kit and instructions were challenging at various age levels. These tests are helping us to improve the design for a more user-friendly version two.

2022 Liftoff Summer Institute Program

By: Tyron Hamamoto, Physics Instructor at Campbell High School



Attending the yearly Liftoff Program for educators was an experience that I will keep with me for the rest of my career. For those unfamiliar with what Liftoff is, it is a 5 day long workshop or more accurately, an experience for teachers of all age groups that takes place yearly in Houston, Texas.

The experience begins upon landing as the hosts of the event, the Texas Space Grant Consortium is gracious enough to arrange pick up from the airport directly to the accommodations for the week. Located near the NASA Johnson Space Center facilities, the area nearby is often geared towards scientists or tourists visiting the facilities.

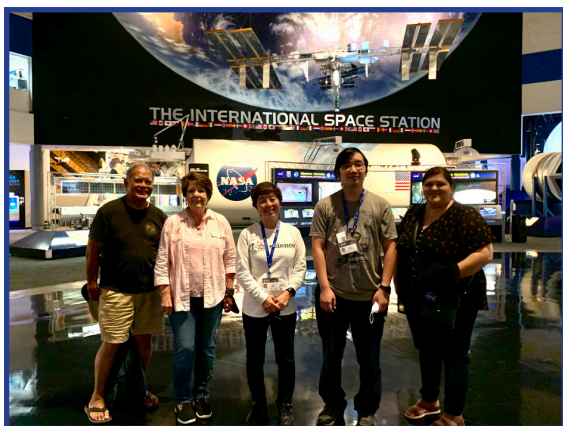
Each day of the conference, teachers are treated to different experiences from both NASA representatives and other teachers. Each speaker brings a different perspective to the table in terms of the focus of the conference which differs each year. This year, the focus was the Artemis program which is the successor to the Apollo program intending to return to the moon for further study of the northern and southern poles.

Lectures from accomplished NASA scientists focused primarily on the mission at hand (in this year's case Artemis);

Actually, you learn far more in this program than throughout the course of your lifetime in the Liftoff program. NASA also provides time for you to learn from its educational outreach specialists who will guide you through some of the lessons designed by NASA using their vast pool of resources. One of the major highlights is the "Teacher Feature" which showcases a lesson from each participant in the program plus a few liftoff alumni from previous conferences. This is a great opportunity to learn new and interesting lessons and teaching techniques that you may not have done or thought to do in your own classrooms.



Between getting to meet accomplished NASA scientists and well known astronauts that have served on everything from Apollo to the various missions on the International Space Station, this is an experience that one does not easily forget. Every moment is another opportunity to not only learn more about astronomy and science from NASA but to learn from the fellow educators that learn with you throughout the experience.



[Left] LiftOff Coordinators, Margaret Baguio (with husband Cal) and [Far right] Celena Miller along with Gayle Kamei, & Tyron Hamamoto [pictured in the middle]



Apollo Mission 11 Control Room

I would highly recommend that any teacher even remotely interested in astronomy to apply for this opportunity should it be available to you. What you come away from it is extremely valuable and can help you with your profession regardless of what subject area one teaches in.

2022 Liftoff Summer Institute Program

By: Gayle Kamei, Math Instructor at Waiākea Intermediate School



Gayle Keiko Kamei's picture taken at the Liftoff Summer Institute event

Hosted by NASA Johnson Space Center, Texas Space Grant and the Hawai'i Space Grant Consortium, LiftOff Summer Institute 2022 was a memorable and exciting professional development experience featuring aerospace and STEM experiences centered around a space science theme...this year's theme, The Artemis Generation!

Coordinators, Margaret Baguio and Celena Miller, from the University of Texas at Austin, Center for Space Research, created an outstanding week-long experience for 55 educators nationally including Puerto Rico. Hawai'i educators, Tyron Hamamoto from Campbell High School, and Jon Kitagawa and I from Waiākea Intermediate School on the Big Island were among the elite group.

Educators received astronomy and STEM curriculum, resources, and NASA gifts. We were briefed on the Artemis project, visited behind-the-scene sites at Johnson Space Center and participated in fun hands-on team challenges and activities. It was amazing to sit with and listen to Astronauts Fred Haise and Don Petit speak of their adventures, and we even had dinner with Astronaut Clay Anderson! We were briefed by NASA administrator Tim Hall, Chief of the Extravehicular Activity (EVA) Operations. Tim also led us on a tour of the Neutral Buoyance Laboratory where astronauts simulate space walks under water. I was inspired by Drew Hood's presentation. Drew is the NASA Engineering Directorate that is developing hardware for the International Space Station as well as Advanced EVA Technology for future deep space missions.

There were many sacrifices made due to the pandemic. In early 2020, travel to the VEX Robotics World Championship in Louisville, Kentucky and Shibuya for the Japan Cup were scrubbed.

Fast forward to where our friends in Tokyo are planning to host the 2023 Japan Cup. As a graduate of LiftOff!, I am excited and look forward to transforming the lessons I learned and the experiences I have gained into modules that will prepare my Waiākea Intermediate School VEX IQ robotics students to travel to Odaiba, Japan. While there, the students will participate in an inter-cultural friendship exchange and participate in a non-competitive VEX IQ Robotics event. This time...We Are Going!



Using Gayle's Teacher Feature Brushbot lesson, educators applied racing bots during the Science Extravaganza

For a successful "mission", students will be taken through a series of lessons centered around teamwork, communication and problem solving, much like the pre-flight lessons from Challenger Centers at Barbers Point and Houston, and Space Camp shuttle simulations. Students' will identify themselves using call signs like in the movie, Top Gun.

My Mission for This Coming School Year as STEM Educator. We Are Going" to:

- Inspire the Artemis Generation to pursue STEM fields of studies through robots.
- Implement key strategies to help students understand the fundamentals of robotics.
- Offer exposure to labs, hands-on activities and science toys that demonstrate the basics of simple machines.
- Learn through modeling, building, designing, documenting, and creating robots.
- Participate in robotics challenges and games in a student-centered, student-driven environment.
- Make connections to real-world scenarios using C-consistency, G-growth, and T-teamwork
- Interact with students in a once-in-a-lifetime cultural exchange at the VEX IQ Robotics Japan Cup.

Mahalo, NASA, Texas Space Grant and Hawai'i Space Grant Consortium!

Hawai'i Space Grant Consortium

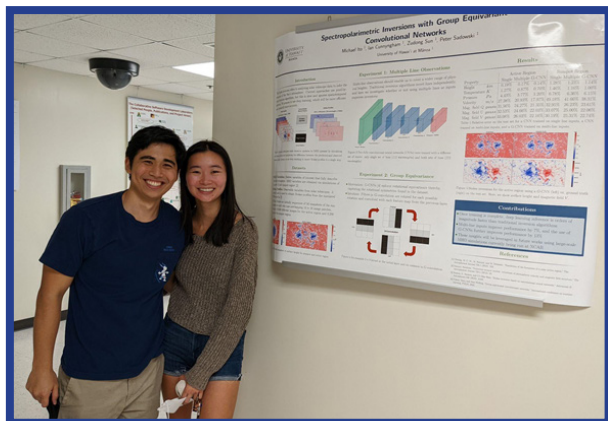
⚙️ FACULTY PERSPECTIVE

— University Research Internship Mentor Support —

By: Dr. Peter Sadowski, Faculty Mentor, UH Mānoa



Michael Ito and Chinenye “Nenye” Ndili are two outstanding students that did summer research in my group using artificial intelligence (AI) for scientific applications. Michael and Nenye first caught my attention by doing very well in my undergraduate classes. I was impressed by their work and the questions they asked in class, so I invited them to do summer projects as part of the NASA Space Grant Program.



Michael Ito and Anya Wu, with Micheal's poster presented at the AI4 Earth Workshop at ICLR, a top AI Conference.

Both Nenye and Michael spent the summer designing, programming, and testing AI systems that solve real science problems. Nenye collaborated with Ocean Engineering professor Justin Stopa and PhD student Nick Glaser to program a machine learning model that analyzes satellite images of the ocean surface to detect rain, biological slicks, wind streaks, and other phenomena. Michael collaborated on a project with Xudong Sun at the UH Institute for Astronomy, developing a neural network that infers the temperature, velocity, and magnetic field of the Sun’s atmosphere from polarimetric images like the ones taken by the Daniel K. Inouye Solar Telescope (DKIST) on Maui. Michael presented his work at the AI4Earth

Workshop at ICLR, a top AI conference, and continued to work in my lab during the school year, going on to publish additional AI applications to both bioinformatics and climate modeling (with Professor Christina Karamperidou). He won the prestigious Computational Science Graduate Fellowship from the US Department of Energy, and is currently doing a PhD in computer science at the University of Michigan.

One of the best things about University of Hawai‘i Mānoa is the opportunity for undergraduate research, where students can experience the challenge and excitement of solving scientific problems. Research requires many technical skills --- some of these are taught in class, but many others are learned only by working on projects in a collaborative environment. In addition to programming, students have to learn how to manage computing systems, visualize data and generate hypotheses, and communicate complex ideas through written and verbal communication. Nenye and Michael both excelled in all these areas, and it was incredibly fulfilling to see them develop as budding scientists.



Sadowski group dinner with Michael Ito and Chinenye “Nenye” Ndili (peaking in the back left).

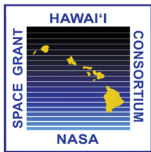
Research is also a great way to learn about and prepare for future career opportunities. Even if students do not end up pursuing a career in the sciences, the technical and problem solving skills that one learns in research are highly transferable to other careers. Both Nenye and Michael started college studying something else, and they are still exploring their options. I am confident Nenye and Michael will do well wherever their careers take them, and they will be prepared to adapt in an ever-changing world.

✓ PIPELINE TO SPACE

HSGC Past Recipients Where are they now?

HSGC is pleased to announce a new section to our website. Since 1999, we have shared online all the news and information regarding our students and their projects, affiliates' and campus programs' accomplishments, state events, and national Space Grant activities. Now, our website will also feature an updated section with past participants dated back from 1990 to present. This new section is featured as "Where Are They Now?".

VISIT OUR WEBSITE TO VIEW
WHERE ARE THEY NOW



*Hawai'i Space
Grant Consortium*



Some featured HSGC Space Grant profiles



Yosef Ben Gershom
B.S. Mechanical Engineering/
EMBA Small Satellite/
UAS Mechanical Engineer
Fellowship, 2016-2017
Current Occupation:
Hawai'i Space Flight Laboratory
Operations Manager & Test Engineer



Brialyon Onodera
B.S. Mechanical Engineer/ EMBA
Mechanical Engineer
Fellowship, 2016-2017
Current Occupation:
Daniel K. Inouye Solar Telescope
Mechanical Engineer



Kyla Edison
B.S. Geology
Fellowship, 2015-2016
Current Occupation:
PhD Space Resources Program



Christopher Pong
Doctor of Science
Future Flight Hawai'i, 1994-1995
Current Occupation:
NASA Jet Propulsion Laboratory
Guidance & Control Engineer



Ethan Ariyoshi
B.S. Electrical Engineering
Internship, 2021-2022
Current Occupation:
NASA Johnson Space Center
Flight Dynamics Officer (FDO)



Taylor Alfiler
B.S. Electrical Engineering
Gen. Dynamics Internship, 2012
Current Occupation:
Associate System Engineer
Booz Allen Hamilton

More Space Grant Alumni featured below

(Order by when they participated in the HSGC Undergraduate Program)

Joy Ishigo

B.S Electrical Engineering
Fellowship, 1991-1992
Current Occupation:
Faculty Instructor,
Southern Alberta Institute
of Technology

Jeffrey Yee

B.S. Mechanical Engineering
Fellowship, 1993-1994
Current Occupation:
CEO, Airwaive

Victor Rundbaken

B.S Mechanical & Electrical
Engineering
Intern Trainee, 1994-1995
Current Occupation:
Electrical Engineer,
Pearl Harbor Naval Shipyard

Michael Lambert

B.S. Mechanical Engineering
Fellowship, 1995
Current Occupation:
Pilot, Hawaiian Airlines

Melinda McKinney

BASc. Physics
Intern Trainee, 1997-1998
Current Occupation:
Biology Faculty,
Coconino Community College

Seth Kamemoto

B.S. Electrical Engineering Systems
Engineering
Fellowship, 2002-2003
Current Occupation:
Software Engineer, Celeris Systems

William Ahue

B.S. Oceanography/ Meteorology/
Atmospheric and Oceanic Sciences
JPL Internship, 2006
Current Occupation:
Incident Meteorologist,
National Weather Service

Kaipo Kent

B.S. Electrical Engineering
Fellowship, 2007
Current Occupation:
Software Engineer, Ad Hoc LLC

Angel Hernandez

B.S. Mathematics
Fellowship & Intern, 2008-2009
Current Occupation:
SMS Enterprise Manager,
Hawaiian Airlines

John Furumo

B.S Mechanical Engineering
Fellowship & Intern Trainee, 2010-2013
Current Occupation:
Electrical Engineer,
Pearl Harbor Naval Shipyard

Corey Shimabukuro

B.S Electrical Engineering
Intern Trainee, 2010
Current Occupation:
Electrical Engineer,
Pearl Harbor Naval Shipyard

Nathan Walsh

B.S. Mechanical Engineering
HSFL, 2012
Current Occupation:
United States Department of Defense

Tristan Martinez

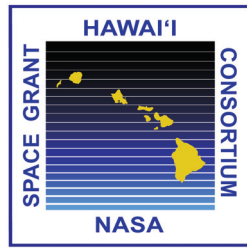
B.S. Mechanical Engineering
Fellowship, 2012-2013
Current Occupation:
Design & Analysis,
GN&C Engineer Control System

Robert Pipes

B.S Astronomy & Physics
Intern Trainee, 2013-2014
Current Occupation:
XPS Scientist,
Eurofin EAG Laboratoriest

Taylor Viti

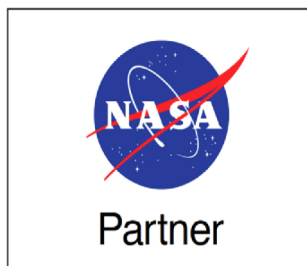
B.S. Electrical Engineering
Intern Trainee, 2016-2017
Current Occupation:
Faculty Research Associate,
National Geoelectromagnetic Facility



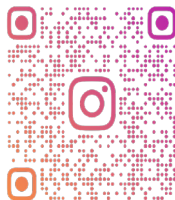
*Hawai'i Space Grant Consortium
Hawai'i Institute of Geophysics and Planetology
School of Ocean and Earth Science and Technology
University of Hawai'i at Mānoa
1680 East-West Road, POST 501
Honolulu, HI 96822*

Hawai'i Space Grant Consortium

Chartered under the National Space Grant College and Fellowship Program in 1990, the Hawai'i Space Grant Consortium develops and runs interdisciplinary education, research, and public service programs related to space science, earth science, remote sensing, human exploration and development of space, small satellites, and aerospace technology. We accomplish this through a variety of projects: Undergraduate research fellowships and traineeships, innovative college courses, workshops for educators, educational web sites, public exhibitions, lectures, tours, primary school programs, space-themed evening programs, and much more.



Facebook: <https://www.facebook.com/hawaiispacegrantconsortium>



Instagram: <https://www.instagram.com/hawaiispacegrant/>

HSGC AFFILIATES

UH Mānoa (Lead Institution)

Dr. Luke Flynn, Director

Dr. Miguel Nunes, Deputy Director

Ms. Marcia Rei Nii, Program Coordinator

Ms. Adria Fung, Robotics Engineer Education Specialist

Dr. Peter Englert, Associate Director, URI Program

Dr. Dora Nakafuji, Industry Affiliate

UH Hilo

Mr. Christian Andersen, Associate Director

UH Maui College

Dr. Jung Park, Associate Director

University of Guam

Dr. Romina King, Associate Director

Hawai'i Community College

Vacant

Honolulu Community College

Dr. Shidong Kan, Associate Director

Mr. Helen Rapozo, Mentor/Affiliate

Kapi'olani Community College

Dr. Radovan Milincic, Associate Director

Dr. Aaron Hanai, Affiliate

Kaua'i Community College

Dr. Georgeanne Purvinis, Associate Director

Leeward Community College

Dr. Jennifer McFtridge, Associate Director

Windward Community College

Dr. Joseph Ciotti, Associate Director

Dr. Jacob Hudson, Rocketry/CanSat Coordinator