

UNIVERSITY OF HAWAI‘I SYSTEM LEGISLATIVE TESTIMONY



SB 2333 RELATING TO THE UNIVERSITY OF HAWAII

Testimony Presented Before the
Senate Committee on Economic Development and Taxation

February 12, 2008 at 1:15 p.m.

by
Virginia S. Hinshaw, Chancellor
Presented by
Peter Crouch
Dean, College of Engineering
University of Hawai'i at Mānoa

**Testimony Presented Before the
Committee on Economic Development and Taxation**

February 12, 2008

1:15 p.m.

State Capitol, Conference Room 224

by

Virginia S. Hinshaw, Chancellor

Presented by

Peter Crouch

Dean, College of Engineering

University of Hawai'i at Mānoa

SB 2333 – RELATING TO THE UNIVERSITY OF HAWAII

Chair Carol Fukunaga, Vice Chair Will Espero, and Members of the Committee on Economic Development and Taxation

Thank you for the opportunity to testify on SB2333 relating to the University of Hawai'i. We support the intent of the SB2333 and agree that robotics is a powerful vehicle for K-12 students to explore and develop exemplary skills in science, technology, engineering, and mathematics. For nearly a decade, the College of Engineering has been involved in multiple aspects of robotics education and outreach and has witnessed its tremendous impact on our students, teachers, and community. The many successful robotics competitions and the dramatic increase in interest and participation are strong testaments to this achievement.

At the current time, it is not reasonable for us to support the recommendation of establishing a task force to research the possibility of creating an institute of robotics within the College of Engineering. We understand that much thought and effort is needed to leverage interest in robotics and to examine opportunities to effectively sustain robotics initiatives and programs. There are many possibilities and models for collaboration which can be explored and I would welcome and support further discussion.

In closing, I would like to add that ACT111 marked a milestone in K-12 outreach for the College of Engineering. Through the Administration's Innovation in Education Initiative - Fostering Innovation and Relevance through Science and Technology – Pre-Academy, Robotics and the Research Experiences for Teachers – Middle School Program, the College will further expand its role in STEM outreach.

Thank you once again for the opportunity to testify and for your continued interest and support in the UH College of Engineering.

William G. Speed
328 Ilimalia Loop
Kailua, Hawai`i
96734

This letter is enthusiastically written in support of SB 2333 which would establish a task force to research the creation of a robotics institute at the University of Hawai`i – Manoa, College of Engineering.

Waipahu High School's Career and Technology Education program has established an Industrial, Engineering, and Technology (IET) Pathway for students who are motivated to those kinds of science, technology, engineering and math careers.

Next school year Waipahu High is offering a Pre-Engineering strand as an addition to its existing IET courses in Automotive, Building & Construction, Design, Electronic, and Metals Technologies.

The Pre-Engineering courses of 'Advanced Technology Education' for juniors, and 'Capstone Project' for seniors intends to prepare engineering school candidates by means of relevant projects. Robotics projects produce tremendous experiences in design, build, and operations for mechanical, electrical and structural engineering candidates. Systems Engineering and Project Management skills abound in robotics projects: air, marine, terrestrial.

A robotics institute could be an accelerator for research and application, a resource and an appealing focal point for the Pacific Rim and cutting edge research and development for civilian, business, and military robotics. It would be a terrific real world academic mentor for our many elementary, middle, and high school roboteers.

You and I have seen the energizing effects that robotics has on young people. An institute of robotics is a good idea for a technology that is happening all around us, now.

Sincerely yours,

Bill Speed

William G. Speed, BME, MSME, PD-SecEd, Sci.
Waipahu High School
Teacher, Science and IET-Pre-Engineering
Advisor Engineers Club
Advisor FRC Team 2477
Advisor ROV Team
Advisor Botball Team 07-0035

Statement of Riley Ceria, Electrical Engineer, Caltech Submillimeter Observatory, 111 Nowelo St., Hilo, HI 96720, phone (808) 990-6582, email: rceria@submm.caltech.edu

before the

SENATE COMMITTEE ON ECONOMIC DEVELOPMENT AND TAXATION

Tuesday, February 12, 2008

1:15 P.M.

State Capitol, Conference Room 224

in consideration of

Senate Bill 2333,

RELATING TO ROBOTICS TASK FORCE (INSTITUTE OF ROBOTICS)

Chair Fukunaga, Vice Chair Espero, and Members of the Senate Committee on Economic Development and Taxation

I support Senate Bill 2333, which would establish a task force to study the feasibility of an Institute of Robotics at the University of Hawaii.

As a graduate from the University of Hawaii at Manoa College of Engineering in Electrical Engineering, I feel one of the reasons that I have enjoyed engineering was due to my participation in a robotics competition called Micromouse. After participating in Micromouse, I was hooked on robotics, and in science and technology. After graduation I found a job with the Caltech Submillimeter Observatory, in Hilo, HI. Part of my job is to conduct outreach with the local community. Having enjoyed robotics to such a great extent in college, I decided to help mentor the students of Waiakea High School, my former high school, in robotics.

As a Waiakea High Robotics mentor I was introduced to all the different robotics opportunities that students have such as Botball, FIRST, Underwater Robotics, and Micro Robots. A couple months after starting as a mentor and Waiakea High, I was introduced to the International Micro Robot Maze Competition in Nagoya, Japan and asked if this would be possible to compete in as it was very technically challenging. Looking it over Waiakea decided to take on this challenge, and created 4 robots to take to Japan in November 2007. This is the first robotics competition that a Hawaii High School participated in that required many higher level concepts. As all other competitions come with kits that can be built, the Micro Robot Competition only had rules that needed to be followed. Students had to design and build their own electronics and electronic boards, and even choose what components to use. They had to find suitable motors and ways to mount the robots together in a 1" cube. Finally after building, they needed to learn how to program a microcontroller that for the first time did not come bundled with precompiled libraries for them to use. As noted in Senate Bill 2333, Waiakea High School was the first high school from the United States to compete in the International

Micro Robot Maze Competition in Nagoya, Japan, and returned with three awards after having competed against high school and college teams, including graduate level teams, from Japan and Korea.

The international competition provided us a ways to measure our students' technological capacity against the world. After seeing their accomplishments after the competition, the students' confidence grew as they now knew that they can do as well as other teams from around the world. Theses types of experiences are necessary if we want our students to be able to compete in the current global environment.

While in Japan Waiakea High was able to enjoy a tour of science and technology. They visited a technical high school, and the robotics laboratories of Nagoya University. They were able to see how robotics is part of health care, surgery, military, space, automotive, and many other types of applications.

An Institute for Robotics at the University would serve to provide a means to foster integration of research and development of robotics as applied to various fields of academic interest and applications to agriculture, medicine, engineering, manufacturing, and the marine and aerospace environment. Further, it would be part of the work force development pipeline which spirals from elementary to middle to high school and to undergraduate and graduate study at the university. The Institute could also be the host for the current pre academy (robotics), thereby providing a statewide program that begins at the elementary level and provides opportunities through college study.

Thank you for the opportunity to provide these comments.

Statement of Art Kimura, Education Specialist, Hawaii Space Grant Consortium,
University of Hawaii at Manoa, 1680 East West Road, POST 501, Honolulu, HI 96822,
phone (808) 934-7261, email: art@higp.hawaii.edu

before the

SENATE COMMITTEE ON ECONOMIC DEVELOPMENT AND TAXATION

Tuesday, February 12, 2008

1:15 P.M.

State Capitol, Conference Room 224

in consideration of

Senate Bill 2333,

RELATING TO ROBOTICS TASK FORCE (INSTITUTE OF ROBOTICS)

Chair Fukunaga, Vice Chair Espero, and Members of the Senate Committee on Economic
Development and Taxation

I support Senate Bill 2333, which would establish a task force to study the feasibility of
an Institute of Robotics at the University of Hawaii.

One of the outcomes in support of catalyzing student interest in science, technology,
engineering and math in the 2007 legislative session was Act 111 which in part,
established a pre academy program that provided project based learning using robotics.
Scholastic robotics programs in Hawaii have significantly increased not only in the
availability of a variety of programs from elementary through high school but in ever
expanding participation by students statewide. Hawaii is host to a number of nationally
affiliated scholastic robotics programs including FIRST, FIRST Lego League, Botball,
and underwater remotely operated vehicles through regional tournaments held in Hawaii,
with winners advancing to national tournaments.

In 2007, Hawaii hosted a national robotics tournament (Botball) and the National
Conference on Educational Robotics which drew the largest participation in that
program's history at 65 teams including 45 from out of state. In addition, a program to
be introduced in fall, 2007, VEX, will provide a unique opportunity for Hawaii to host a
world championship including as many as 90 teams from Asia and the mainland United
States as well as Hawaii. As noted in Senate Bill 2333, Waiakea High School became
not only the first high school from the United States to compete in the International
Micro Robot Maze Competition in Nagoya, Japan, but returned after having competed
against high school and college teams from Japan and Korea and winning three
significant awards.

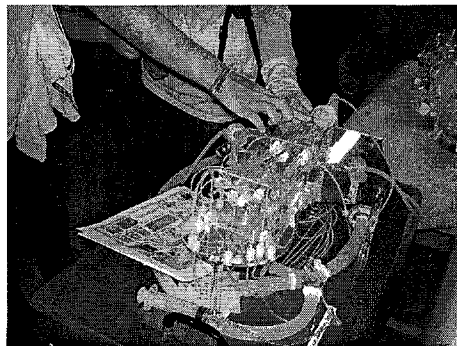
The mentor for this team, Riley Ceria, is a graduate of the University of Hawaii's College
of Engineering who participated in a robotics program called Micro Mouse during his

undergraduate study, which provided the foundation for his interest and expertise in mentoring the high school team. One of the team members, Kelson Lau, has designed and fabricated a two inch bipedal robot which uses 8 motors (the Japanese version that we saw had typically 2 or 3 motors), which will be entered into the upcoming technology fair; Kelson and Riley hope to return to the Micro Robot competition in Japan in fall, 2008, to compete again. The international competition provides us with a measurement of the quality of students and mentors that we have in Hawaii. If we expect our students to compete in a global environment, we need to continue to provide our students with the opportunity to compete in national and international competitions.

As part of the Waiakea High School micro robot team visit to Japan, they were guided on a tour of the robotics laboratories at Nagoya University. The students could see the integration of academic disciplines in the research and the application of robotics to medicine, home assist care, home land security, and industry. A tour of the Toyota Commemorative Museum and the National Museum of Emerging Science and Technology show cased the applications of robotics in a variety of disciplines.

An Institute for Robotics at the University would serve to provide a means to foster integration of research and development of robotics as applied to various fields of academic interest and applications to agriculture, medicine, engineering, manufacturing, and the marine and aerospace environment. Further, it would be part of the work force development pipeline which spirals from elementary to middle to high school and to undergraduate and graduate study at the university. The Institute could also be the host for the current pre academy (robotics), thereby providing a statewide program that begins at the elementary level and provides opportunities through college study.

Thank you for the opportunity to provide these comments.



Statement of Eric Hagiwara, Med, Mathematics Department Chair, Waiakea High School, 155 West Kawili Street, Hilo, Hawaii 96720. Eric_Hagiwara@notes.k12.hi.us

before the

SENATE COMMITTEE ON ECONOMIC DEVELOPMENT AND TAXATION

Tuesday, February 12, 2008

1:15 P.M.

State Capitol, Conference Room 224

in consideration of

Senate Bill 2333,

RELATING TO ROBOTICS TASK FORCE (INSTITUTE OF ROBOTICS)

Chair Fukunaga, Vice Chair Espero, and Members of the Senate Committee on Economic Development and Taxation

I support Senate Bill 2333, which would establish a task force to study the feasibility of an Institute of Robotics at the University of Hawaii.

At Waiakea High School, we have been involved with a Student driven robotics program for the past 6 years. We are now seeing our former students graduating with degrees in Engineering. All have reported to us that it was their participation in the Robotics' program at Waiakea High School that germinated their career goals in the Engineering field.

Myself and my co-advisor, (Mr. Dale Olive, Physics Teacher), originally got involved with robotics as a way to further our academic efforts to integrate the Math and Science curriculum. Here it is six years later and we are still involved because this has worked extremely well. We often see the "Aha..." moments in our students whom are involved with this program. Both of us take every opportunity to infuse the importance of Math and Science to our students. This robotics program has provided an effective method to deliver Math and Science to our students.

We believe that robotics will play a major role in our future economy. Although, our students build robots for competition, they have realized how robotics and the skills they are learning are being used in today's workforce. During our national FIRST robotics competition in Atlanta, Ga, we took our students on a tour of a potato chip factor where robotics played a major role in the production and packaging of potato chips. Our students had one of those Aha... moments. They saw robotic arms that were very similar to what they built on our competition robot. I see the military is starting to utilize robotics more and more. I believe the future workforce will be deeply involved with robotics and that our Educational system needs to provide a robotics experience for all students from secondary to post-secondary education. We also believe that Robotics

have played and can continue to play an important role in supporting our core curriculum in Math, Science and English. We have ignited interest in our students at the High School level. We need to ensure that they have a place to continue beyond High School. Waiakea High School is presently one of the top 10 feeder schools to the UH's College of Engineering. Waiakea also have many students whom are in Engineering programs outside of the State of Hawaii. When our team visited Nagoya University, we were given the opportunity to see some of the cutting edge directions robotics is taking.

As part of the Waiakea High School micro robot team visit to Japan, they were guided on a tour of the robotics laboratories at Nagoya University. The students could see the integration of academic disciplines in the research and the application of robotics to medicine, home assist care, home land security, and industry. A tour of the Toyota Commemorative Museum and the National Museum of Emerging Science and Technology show cased the applications of robotics in a variety of disciplines.

Thank you for this opportunity to provide testimony. I would be more than willing to clarify and part of this testimony for you.

Eric Hagiwara, Med,
Mathematics Department Chair
Waiakea High School
155 West Kawili Street
Hilo, Hawaii 96720
Eric_Hagiwara@notes.k12.hi.us

TESTIMONY FOR SB 2333

Dear Sir,

I fully support your robotics bill to establish a task force to research the creation of a robotics institute at the UH College of Engineering. If there is anything I can do to help, please let me know.

Thank you,

Winston Dang