

## Local students enjoy real-life learning

By Ma'ata Tukuafu

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Eric Dela Rosa was introduced to computers and technology by a friend, but never dreamed he'd be on the path he is now on. Born and raised in Honoka'a, Dela Rosa is currently enrolled at Hawaii Community College in the Information Technology program, and works at Keck Observatory. He heard about the Akamai Observatory Internship Program and with the prompting of his girlfriend, applied. "Keck really supports local students," Dela Rosa said. "I currently have four high school students working under me."

This unique internship program is held each summer and offered to 10-15 Hawaii college students enrolled in science or engineering programs. Lisa Hunter, of the Center for Adaptive Optics (CAO) said students attend a seven-week research experience at an observatory facility, participate in a 40-hour Akamai Observatory short course, do research, learn teamwork, and are taught to communicate their research in a coherent manner.

"In our 2005/06 program, we had 23 Big Island students graduate in science and engineering," Hunter said. "One hundred percent of those students are all on pathways to their careers." She maintains that the internship program enjoys such a high rate of success because of the help and support of the mentors and staff, who know what it takes for students to succeed.

During his internship, Dela Rosa worked at Canada-France-Hawaii Telescope with mentor Gregor Barrick. His job was to create a computer program for a tedious job that was previously done manually; instead of operators spending as long as five hours to two days to collect information, the goal of Dela Rosa's project was to create a computer program that would cut down that job time to 15 minutes.

At summer's end, a symposium was held at UH Hilo where the interns presented their findings and conclusions to a group of scientists, mentors, advisors and to the public. With the help of PowerPoint slideshows, interns spoke about their individual projects and what they were able to accomplish. Dela Rosa easily explained in layman's terms about ESPaDOnS, a high-resolution spectropolarimeter which was designed to collect a complete optical spectrum in a single exposure. "This allows astronomers to learn about the magnetic polarization of stars," he said. "Setting up ESPaDOnS is tedious and frustrating because it is done manually." Dela Rosa presented the design of the user interface he created and how, when set-up is complete, the program displays the results, saves to a text file and prints out the results for the operator. "It's so easy a cave man could do it," Dela Rosa said, ending his speech to the applause of the audience.

Jamie Cookson, a senior at UH Hilo will be graduating at the end of the year with a B.A in Physics. She was involved with the All-Sky Survey High-Resolution Air-Show Array experiment (ASHRA), a collaboration between UH Hilo and the University of Tokyo-Japan. The experiment

implemented 28 detectors on the 11,000 ft. level of Mauna Loa to detect air showers created by collisions between particles in Earth's atmosphere and high-energy particles.

"My involvement with the experiment has been to construct housings for detectors," Cookson said. She said she helped level the land, assemble walls and roofing (of pre-fabricated structures shipped from Japan), installed steel frames for the detectors and put in shutter doors and insulation. It took three days to assemble one housing and Cookson determined that the assembly-line method worked best. "At eleven-thousand feet, digging in the lava to place posts at equal levels was not fun," she said, as many in the audience laughed knowingly. By the end of her internship, Cookson completed 18 detector housings.

On the mentor's side of the equation, all felt their involvement with helping interns accomplish their goals was completely worthwhile. Craig Nance of Keck was a mentor to Joseph Hernandez, an electrical engineering student enrolled at UH-Manoa. "I was able to assign a job to Joseph that I had no time to do myself," Nance said. "Joseph brought his textbooks with him, but I knew he wasn't going to use them."

As an engineer at Keck, Nance said he always has more ideas of things to do, than time to do them in. He looks forward to the Akamai Internship program every summer, where he can define what needs to be done, delegate the work to an intern, and then keeps an open-door policy to answer any questions the intern may have. "When they understand clearly the defined bounds of a project, they get going and it goes well," said Nance. This summer he assigned Hernandez to "measuring dome seeing with a displaced-beam small aperture scintillometer (DBSAS)," a project that involved testing the DBSAS in various configurations to ensure that it has the sensitivity to operate within the volume of Keck telescopes.

For the scientifically-impaired within the symposium audience, it was gratifying to know that each intern knew exactly what they were talking about, and all presented their findings in a coherent and meaningful fashion.

Dex Alpiche grew up in Pa'uailo, works at Subaru Telescope and is currently pursuing a B.S. degree in the Electricity Program at Hawaii Community College. He interned at Submillimeter Array (SMA) with mentor Derek Kubo and his goal was to create an acoustic noise canceling system for a room that was "so loud that people had a hard time communicating in it."

In his presentation, Alpiche showed photos of his project as it progressed and how he "took tests using an oscilloscope...and produced a circuit that can replicate and cancel out the 120Hz sound in SMA's maintenance facility." Of his summer internship, Alpiche said although it was a bit intimidating at first, he enjoyed meeting others with different work ethics. "I was able to use different strategies to solve problems and find ways to new solutions," he said.

All 2007 interns agreed that being in a "real-world" situation made their learning more applicable. Hernandez said he found the staff was very helpful and he gained a huge amount of

experience with his project. All of the interns presenting their work showed gratitude to their program advisors, mentors and all involved, by thanking them at the end of their talks.

Sarah Stoenner, a UH Hilo student who interned at Submillimeter Array said, “I think anyone pursuing a degree in science or engineering should participate in this program. It’s fun.”

The Akamai Observatory Internship Program began in the 2003/04 academic year. Based on an internship model designed by the Center for Adaptive Optics using National Science Foundation (NSF) funding, it has the specific aim of developing and piloting a program to address the astronomy-related workforce needs in Hawaii.

Sarah Anderson of Keck does a huge amount of work to encourage students to become interns and is heavily involved with the organization of the program. As the internship coordinator, Anderson said students gain work experience with their internships, and they are also given tools to assist them in the real world; they learn to create well-written resumes, are taught how to organize presentations and achieve a sense of accomplishment for having assisted other team members with working solutions.

Participating organizations in 2007 included ASHRA, Canada-France-Hawaii Telescope, Gemini Observatory, Hawaii Community College, Institute for Astronomy, Keck Observatory, Smithsonian Submillimeter Array, Subaru Telescope and the University of Hawaii at Hilo. For more information, you may reach Sarah Anderson, the Hawaii Island Internship Coordinator at 881-3839 or HYPERLINK "<mailto:Anderson@keck.hawaii.edu>" [anderson@keck.hawaii.edu](mailto:anderson@keck.hawaii.edu).

## **SIDEBAR**

Eleven student interns participated in the 2007/08 Center for Adaptive Optics Akamai Internship program and presented their projects:

Dustyn Iwamoto – *Subaru Telescope*.

“Designing a Portable Data Acquisition Unit: Increasing Efficiency and Maximizing Productivity by Use of Standards.”

Travis Prose – *Gemini North Observatory*.

“Development of the GHSD (Gemini Health Status Display) for Gemini Observing Assistants and Astronomers”

Jessica Solano – *UH Hilo: Physics & Astronomy Department*.

“LabVIEW Control Software for the UH-Hilo 0.9m Telescope”

Dex Alpiche – *Submillimeter Array (SMA)*.

“Acoustic Noise Canceling System”

James Linden – *Gemini Observatory*.

“Computer Modeling of the Helium Closed-Cycle Cooling System in the Gemini Observatory”

Sarah Stoenner – *Smithsonian Submillimeter Array*.

“Effects of Temperature Variation on the Telescope Pointing at the Submillimeter Array”

Aurora Jacqueline Mena – *WM Keck Observatory*.

“WM Keck Observatory Laser Dye Performance”

Eric J. Dela Rosa – *Canada-France-Hawaii Telescope*.

“Automating Astronomical Instrument Setup”

Jamie Cookson – *All-Sky Survey High-Resolution Air-Shower Array (ASHRA)*.

“Housing Construction for ASHRA Detectors”

Isaac Crosson – *WM Keck Observatory*.

“The Effect of Wind-Shake on the Control of Large Telescopes”

Joseph Hernandez – *WM Keck Observatory*.

“Measuring Dome Seeing with a Displaced-Beam Small Aperture Scintillometer”