**Education and Outreach: PRIME**

For the past 10 years, PRAGMA collaborators have actively participated in the Pacific Rim Experiences for Undergraduates program, otherwise known as “PRIME” (prime.ucsd.edu). Created in 2004 to provide a project-based, hands-on research internship program combined with an experience in international cultural awareness for science and engineering undergraduates at the University of California, San Diego. PRIME grew out of the [PRAGMA](http://www.pragma-grid.net" \o "Visit Website" \t "_blank) collaborative project framework and people network. PRIME’s projects are facilitated through collaborations between UC San Diego and international researchers within the Pacific Rim.

As of 2013, 186 students had participated in the program, to include 89 female undergraduates. PRAGMA collaborators in Australia, China, India, Japan, Malaysia, New Zealand, and Taiwan have embraced this program, welcoming our students to their institutions and laboratories for nine weeks during our summer months, actively engaging them in research.

A 2013 PRIME award winning project that should be highlighted was due to the outstanding efforts of UCSD’s undergraduate student Jesus Rios. His project brought together collaboratory efforts between the Balboa Park Online Collaborative (BPOC) and the Japanese Friendship Garden (JFG) in San Diego, as well as the National Institute of Information and Technology (NICT) in Osaka, Japan. While in Japan, Rios was mentored by PRAGMA Steering Committee member, Dr. Shinji Shimojo (NICT), Dr. Jason Haga (UCSD/NICT), and Dr. Vivian Kung-Haga (BPOC). Rios created an Android smart-phone application that used a new location based technology. “Placesticker”, provided by iSiD, served as an interactive guide for Balboa Park’s JFG, and allowed visitors to learn and discover more about the garden’s collections. The application developed uses clues — which consist of a “haiku” and a related drawing — to navigate users through scavenger hunts across the Garden. At the 2014 MUSE Award ceremony in Seattle, Washington, the American Alliance of Museums presented a gold medal for the JFG Haiku Hunt via the Honeysett & Din Award (see: <http://www.aam-us.org/about-us/grants-awards-and-competitions/muse-awards/past-award-winners/2014-muse-awards>). Additional information regarding this project can be found in the Rios’ final PRIME report (<http://prime.ucsd.edu/student-voices/reports/2013/Rio_Jesus_Final_2013.pdf>). UC San Diego’s Jacobs School of Engineering also reported on the project and prestigious award here: http://cse.ucsd.edu/node/2548.

This summer, PRAGMA collaborators in Australia, Japan and Taiwan are hosting 10 additional PRIME students (six males, four female). Information regarding the students, their hosts and projects appears below:

**NARA Institute of Science and Technology (NAIST)  
Nara, Japan  
http://www.naist.jp/en/**

***Anthony Nguyen***

**Class Standing: Senior/2016**

**Major: Bioengineering  
Minor: None**

**UCSD Mentor: Dr. Jason Haga  
Host Mentor: Dr. Kohei Ichikawa**

**Project Title:** Deployment of Virtual Clusters on a Commercial Cloud Platform for Molecular Docking

**Summary:** This project aims to upload a virtual machine that runs a protein-ligand molecular interaction simulation program called DOCK to a commercial cloud platform. This platform allows tasks to be performed on a large scale cheaply and efficiently. Three areas will be investigated: 1) the elasticity of the virtual clusters, 2) the fault tolerance of the system, and 3) the use of several virtual clusters on the commercial clouds to form a single system. By utilizing a commercial cloud(s) the system performance will be increased and will allow millions of protein-ligand interaction simulations to be run in a massively parallel manner.

***Yue (Derek) Song***

**Class Standing: Junior/2015**

**Major: Human Biology**

**Minor: None**

**UCSD Mentor: Dr. Jason Haga  
Host Mentor: Dr. Kohei Ichikawa**

**Project Title: same as Anthony Nguyen (group project)**

**Summary: same as Anthony Nguyen**

***Katy Pham***

**Class Standing: Junior/2016**

**Major: Human Biology**

**Minor: Global Health**

**UCSD Mentor: Dr. Jason Haga  
Host Mentor: Dr. Kohei Ichikawa**

**Project Title: same as Anthony Nguyen (group project)**

**Summary: same as Anthony Nguyen**

**National Center for High-performance Computing (NCHC)  
Hsinchu, Taiwan**

***Ashley He***

**Class Standing: Senior/December 2014**

**Major: Electrical Engineering  
Minor: None**

**UCSD Mentor: Dr. Philip Papadopoulos  
Host Mentor: Dr. Fang-Pang Lin**

**Project Title:** 3D Reconstruction from Multiple 2D Images

**Summary:** To develop a program that processes multiple 2D images to construct a 3D point cloud and optimize it for large-scale real-time applications.

**National Institute for Information and Communication Technology (NICT)  
Osaka, Japan  
http://www.nict.go.jp/en/**

***Allen Nguyen***

**Class Standing: Senior/2015**

**Major: Computer Science**

**Minor: Music**

**UCSD Mentor: Dr. Jason Haga  
Host Mentor: Dr. Shinji Shimojo**

**Project Title:** iBeacon Deployment

**Summary:** This project involves the use of iBeacons to map out a location within a space. Instead of utilizing GPS technology, Bluetooth chips are used vs. satellites. The goal is to use this technology in a mobile application to interact with users who explore the Japanese Friendship Garden in Balboa Park.

***Lok Yi (Nicole) Wong***

**Class Standing: Sophomore**

**Major: Computer Science  
Minor: None**

**UCSD Mentor: Dr. Jason Haga  
Host Mentor: Dr. Shinji Shimojo**

**Project Title:** Railroad Museum Interactive Web Application

**Summary:** This project involves collaborator efforts with the Railroad Museum in making their special railroad model for the Centennial Anniversary of the Balboa Park. The goal is to make the museum more interactive and friendly by automating their model so visitors of all ages can control it via mobile devices and laptops. Examples include the ability to make a water fountain or a light come on with the use of a mobile device.

**National Taiwan University (NTU)  
Taipei, Taiwan  
http://www.ntu.edu.tw/engv4/**

***Garrett Chan***

**Class Standing: Junior/2015**

**Major: Chemical Engineering  
Minor: None**

**UCSD Mentor: Dr. Rommie Amaro  
Host Mentor: Dr. Jung-Hsin Lin**

**Project Title:** Markov State Model Construction Through Kepler Scientific Workflows

**Summary:** The goal of this project is to create an automated workflow that will compile and analyze information about protein conformation changes, and use that information to construct Markov state models. The Kepler workflow streamlines the model-building process to increase efficiency and reproducibility,

**University of Queensland   
Brisbane, Australia  
http://www.uq.edu.au**

***Kyle David Suico***

**Class Standing: Senior/December 2014**

**Major: Bioengineering/Biotech  
Minor: Business Specialization in Operations**

**UCSD Mentor: Dr. Andrew McCulloch  
Host Mentor: Dr. David Abramson**

**Project Title:** Parameter Fitting in a Cardiac Ventricular Myocyte Model

**Summary:** Optimization of the current model on calcium exchange by fitting them according to experimental data is the goal of this project. By using a family of tools called NIMROD, developed by Dr. Abramson's lab, and coupling it with MATLAB we can run high-throughput simulations that would normally take months to execute. This will further our understanding of the heart model and can also lead future scientists in designing experiments.

***Matthew Schwegler***

**Class Standing: Junior/2016**

**Major: Computer Science  
Minor: None**

**UCSD Mentor: Dr. Ilkay Altintas  
Host Mentor: Dr. David Abramson**

**Project Title:** Kepler Workflows for Magnetic Resonance Imaging

**Summary:** Implementation of scientific workflows for MRI imaging is the goal of this student’s PRIME project. To accomplish this he plans to take in raw MRI data and create Kepler actors to process that data and generate high-resolution 3D images, while also creating MRI-related tools.

***Katerina Zorko***

**Class Standing: Junior/2016**

**Major: Computer Science Specializing in Bioinformatics  
Biology**

**UCSD Mentor: Dr. Jurgen Schulze  
Host Mentor: Dr. David Abramson**

**Project Title:** Rendezvous Smartphone Application

**Summary:** Rendezvous will allow users to create events, which will display the invited friends’ locations on a map as well as each person’s distance away from the final meeting location. Ms. Zorko hopes that this capability can curtail texting and driving since members of the event will see either the distance or location of each friend and drivers will not need to continually text others to let them know that they are on their way. In addition, the goal is to maintain user privacy and therefore, users will have full control over their location sharing preferences. They can choose to share just their distance in miles or this distance as well as their coordinates on the map. By the end of the summer, the student intends to have a completed prototype of the app.