



California Institute for Telecommunications
and Information Technology



California Plug Load Research
Center

Undergrad/Graduate 199/299 Research Opportunities

The California Institute for Telecommunications and Information Technology (Calit2) at UC Irvine is seeking student innovators for cutting-edge, industry focused engineering, art/technology interface, and computer science research.

More than 200 UCI faculty and students are actively engaged in Calit2 and CalPlug (a division of Calit2) research on environmental, transportation, energy management, health care, education and entertainment-based projects.

APPLICATION PROCESS AND REQUIREMENTS

Motivated applicants are welcome to apply and attend one of the orientations. Please follow these procedures to apply:

“Introducing CalPlug/Calit2”

3008 Calit2 Building

Irvine, CA. 92697-2800

October 3rd and October 4th from 4pm to 5pm

(ATTENDANCE TO ONE SESSION IS MANDATORY FOR ALL INTERESTED STUDENTS)

1. Students may only receive 199/299 credit for the first quarter of research with CalPlug. No paid positions are available to new research students. Paid positions will be offered only if funding is available and to students showing high caliber research with need.
2. GPAs >3.0 are strongly desired. Students applying with lower GPAs must explain extenuating circumstances and show maintained academic improvement to be considered.
3. Students should consider dedicating 2 quarters if possible.
4. Submit a one-page resume along with unofficial academic transcript with introductory letter to the Admin Team at calplug@gmail.com. Please copy Dr. Michael Klopfer mklopfer@uci.edu, Dr. Sergio Gago sgagomas@calit2.uci.edu and Linyi Xia linyix@uci.edu. Please discuss projects of interest (including Position ID) in the email. **To be done BEFORE October 7th.**
5. Selected students will be contacted to schedule an interview. Interviews will focus on student ability, interest, availability, and project matching. Project scheduling will follow the interview.
6. Students are expected to work a minimum of 8 hours per week on research (equivalent to 2 units).
7. Students are expected to work in professional, interdisciplinary teams.
8. Students are strictly held to unit-hour requirements (4 hours/week per unit). Substantial unexcused divergence from the required time will result in an incomplete or fail grade.
9. Students are required to submit a summary report for the work performed each quarter.

10. No more than 1/3 of research work can be performed offsite from Calit2. Students must be present to gain personal and team development.
11. Students will keep timesheets and work logs during projects. Research notebooks will be maintained. A quarter-end written report is required from all 199/299 students. Reports and presentations will be used to assess grades.

BENEFITS

- Students will obtain **hands-on research experiences** for industry leading topics under the guidance of **Prof. G.P. Li**. Day-to-day supervision will be available from **Dr. Klopfer and Dr. Gago**, and/or other project leaders at Calit2 and CalPlug.
- In addition to **199/299 course credits** during the first quarter of research, students who maintain outstanding research performance will be considered for **potential compensation** as funded projects become available.
- Designated **cubicles, project space, project supplies, test equipment, and computers** will be provided to students according to project needs.
- **Recommendation letters** provided to exemplary students are valuable thanks to Calit2 and CalPlug's strong affiliation with major organizations and industry players and other UC Schools and campuses, Ex: California Energy Commission, Southern California Edison, Microsemi Corporation, and the Consumer Technology Association. More than 1.5 quarters of work is required to be potentially eligible for a recommendation letter.
- **Hard and soft skill development** in students is a focus. We seek to develop our students into high quality engineers and leaders. Impressive project portfolios with solid, real-world achievements are commonly the result of conducting research at CalPlug/Calit2.

POSITIONS

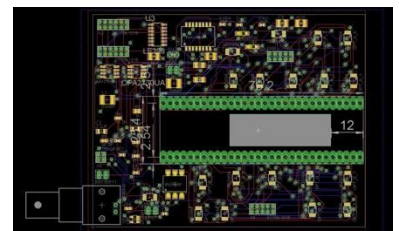
We are calling for a talented group of students from engineering departments (EE/CS/ICS/MAE), Social Sciences and the School of Arts to join our team. Diversity is a must for creativity. Current positions are listed below.

Position ID: Klo-Fall1601

Research field: Hardware Design and Prototyping

Main tasks: Electrical Circuit/System Design

The team focuses on making an energy saving solution that externally attached to retrofit existing consumer electronics to perform energy saving actions with minimal human intervention. Student will participate in schematic and PCB design for various projects. The designs may involve analog and digital circuitry and power supply design. A strong background in circuit design recommended. Preferred



experience: **PSPICE, OrCAD, EagleCAD, Adobe Illustrator, soldering, bread boarding and ability to read datasheets.**

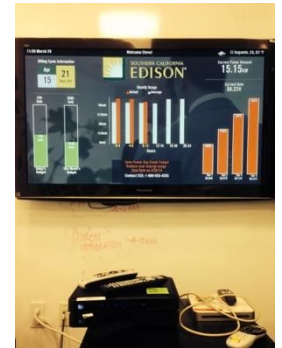
Position ID: KIo-Fall1602

Research field: Hardware Design and Prototyping

Main tasks: Firmware Development

Student will write firmware and embedded code for microcontrollers, FPGAs, and SoCs. Common platforms include **PIC, DSP, Arduino, Raspberry Pi, ARM Cortex-M3, Xilinx** and **Microsemi SoCs.**

Requirements: **basic knowledge in programming of C. HDL (VHDL/Verilog) and Python programming are beneficial.**



Position ID: KIo-Fall1603

Research field: Software Design and Development

Main Tasks:

This team is looking for a group of students that are tech savvy and passionate about the new generation's communication. We are looking to promote energy awareness through traditional online media and gamification of energy education. We seek students who have great skills for designing, generating, and maintaining a website in addition to integrating real time data as site contents. Requirements: Excellent communicational skills and ability to work as a team. Knowledge of social media, including Facebook, LinkedIn and etc. is a must.

Knowledge/experiences on **HTML, CSS, Javascript, PHP, Wordpress, and SQL database management (server side)** are preferred.

Position ID: KIo-Fall1604

Research field: Energy Efficiency

Main Tasks: Testing, Instrumentation and Internet of Things (IoT) Device Development

This research team currently focuses on development of equipment for automated testing and power use research. Testing focuses on measurement of power draw from various types of appliances/devices including set-top-boxes, audio systems, game consoles. This team works close with industry. A focus on quality methods is maintained for all testing.

Knowledge/experience in **SQL Databases, Oscilloscopes, LabView, or MATLAB,** is preferred.

Position ID: Gago-Fall1601

Research field: Software Design and Development

Main Tasks: Web/Database Development

This research team focuses on developing web-based applications to assist researchers with data management in several fields, such as energy management, healthcare and anthropology. Knowledge/experiences on **HTML, CSS, Java script, Python, SQL,**

AngularJS, Django, PGSQL, node.js, and database management (server side) are preferred.

Position ID: Gago-Fall1602

Research field: Software Design and Development

Main Tasks: iOS/Android Development

This research team focuses on developing mobile applications and serious games for research on medical informatics and energy efficiency. Knowledge and experiences on **Java, C++, C#, Unity3D, ActionScript,** or **Objective C programming** experience is preferred.



Position ID: Gago-Fall1603

Research field: 3D Modeling and Graphic Design

Main Tasks: Character modeling and animation/Videogame development

This research team targets at a specialized area of animation process, which involves bringing animated characters and creatures to life. The goal is create engaging interactions through virtual characters to improve user experience of the interfaces developed. Hands on experiences in 2D/3D modeling and animation tools (**3Ds Max, Iclone, Maya, Poser**) and graphic design (**Photoshop, Illustrator**) are preferred. Students majoring in Arts are welcomed.



Position ID: Gago-Fall1604

Research field: Artificial Intelligence / Machine learning

Main Tasks: Design and implement algorithms for tasks such as Optical Character Recognition and Signal disaggregation.

This research team targets statistical analyses to learn from unstructured, real-world behavioral data. The goal is to design and implement machine learning algorithms to easily and efficiently train, deploy, and measure models. Calit2 is looking for students majoring in computer vision, machine learning or equivalent field and/or experience with a neural network library and ability to work independently and be self-driven.

Position ID: Xia-Fall1601

Research field: SIM Home

Main Tasks: iOS app development

Student will be working in a team to continue developing our iOS app for the SimHome guided touring experience using BLE beacons. Students will also participate in animated avatar interaction designs.

Preferred but not required skills: MATLAB, Google Sketch, EnergyPlus, AutoCAD.



Position ID: Xia-Fall1602

Research field: SIM Home

Main Tasks: Automated appliances testing

Under the notion of IOT, future homes will be more automated and connected. This project team will focus on how to probe and measure event driven energy consumption. The team has done great amount of work to establish the foundation of the testing automation and will need someone who is detail oriented to take measurements and run testing. You will learn how to use and develop using LabView. **Preferred but not required skills: LabView, MATLAB**



Position ID: Xia-Fall1603

Research field: Telemedicine/Health Card/ PICARD

Main Tasks: User Interface Design and implementation

This team mainly focuses on designing an elegant user interface for hardware system interfacing and controlling running Linux on Raspberry Pi. **Preferred but not required skills: Java, JavaScript, Node JS, Express, QT, Git.**

