

FACTULY MENTOR

Leung, Vincent

PROJECT TITLE

Enabling a Wireless Communication Network of Brain Implants

PROJECT DESCRIPTION

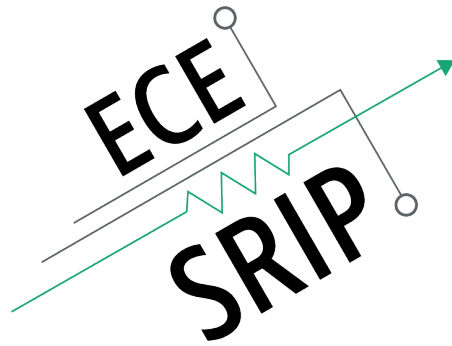
Wireless implantable chips could dramatically increase the scale and resolution of existing brain machine interface (BMI), holding enormous promises to restoring sight to the blind, hearing to the deaf, or mobility to the paralyzed. At UCSD QI's (Qualcomm Institute) Circuits Labs, a variety of advanced wireless CMOS IC called "Neurograins" had been designed and fabricated. Initial test results were very encouraging. To continue this effort, SIRP students will conduct increasingly complicated lab experiments under the PI's supervision. They will be taught to operate and automate advanced test equipment to verify wireless power transfer, establish bi-directional (uplink/ downlink) wireless communications, and activate sophisticated networking protocol. Ultimately, the lab experiments should lead to the design and implementation of a miniaturized wearable communication hub.

INTERNS NEEDED

2 (one MS, one BS)

PREREQUISITES

ECE 154A/B required. ECE166, ECE265A/B is a plus.



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PROJECT TITLE

Develop a hands-on Wireless Communication Project based on NI's SDR Platform

PROJECT DESCRIPTION

In partnership with National Instrument (NI), QI Circuits Lab's research engineers will guide SRIP students to build 1 to 2 RF transceiver (Radio Frequency Transmit/ Receive) boards. The prototype will interface with NI's SDR (software-defined radio/ Labview) platform. The goal is to demonstrate a real-life, functional wireless radio that mimics a WiFi modem. This study will help to create a hands-on undergraduate class on wireless communication, and enrich the content of NI's Lab Course curriculum.

INTERNS NEEDED

2 (one MS, one BS)

PREREQUISITES

ECE 154A/B required. ECE166, ECE265A/B is a plus.