# Integrated Sensing Platform

UCSB Capstone Project | Senseeker Engineering Inc.

Senseeker Engineering Inc. provides silicon IP, IC and image sensor design and systems engineering all targeted at the unique needs of the scientific and infrared image sensor community. We specialize in the design of digital imaging sensors and readout integrated circuits for hybrid image sensing arrays. We are located in the Santa Barbara, CA, area amid the west coast's hub of infrared and scientific image sensor companies. For more information visit Senseeker.com.

**Project Description**

While establishing a proof of concept or initial design, an often-overlooked effort for the designer is coalescing various discrete devices which use different communication protocols. We would like to minimize this effort by creating an integrated sensing platform of various sensors that is capable of transmitting data using a standard digital interface. We want this solution to be a generic, low cost platform that can be quickly and intuitively implemented by the end user.

**Project Objective**

Create an integrated sensing platform, with sensors that include but are not limited to: accelerometer; image sensor; temperature sensor; capacitive touch sensor; range finder; hall effect sensor; radiation sensor; and pressure sensor. The system should implement a variety of sensors which maximize the utility of the final design and enable it for use in a variety of applications. The platform should be able to transmit sensor data from any of the sensors using a consistent digital data interface. Selection of sensors should be chosen based on cost, yield, and general application requirements. In addition, we would like the team to design and fabricate a PCB and integrate selected sensors into a homogenous physical design.

**Project Deliverables**

Prototype PCB design with integrated sensor nodes
Demonstrate communication to all sensors through single interface

**Preferred Student Qualifications**

Background in electrical engineering
Interest in sensors
Experience in discrete component design
Experience using microcontrollers to deserialize and write data

**Assets Available to Students**

Engineers at Senseeker Engineering Inc.