Objectives and Goals
The objective is to create a more natural and healthy non-contact interface for controlling lighting environments.
- Recognize four swiping gestures in real-time
- Simple Smart light setup and integration
- Wireless connections across models
- Used low-cost IR sensor for gesture detection

Gesture Recognition
Uses Support Vector Machine to predict hand gestures in real-time and train using features calculated directly from data coming from PIR sensor.
- 3 x IR feedback Peak Occurrence Time (Directional Information)
- 3 x IR feedback peak width (Speed Information)
- 3 x IR feedback peak amplitude (Distance Information)

Human Interaction Module
- MCU interfaces with PIR sensor via I2C
- MCU does gesture recognition analysis of data received from PIR sensor
- Will send this data over Bluetooth to MSP430 on power module to interact with lights

Smart Light
- Three (RGB) PWM control signals sent from MCU to the gate driver circuit to control the lights.
- Lighting consists 4 sets of 9 RGB LEDs hooked up in series.
- LDO used to power the MCU receiving and sending light control signals.
- Input Power is 30V which is an output of the power module
- Light commands sent to the MCU via Bluetooth from HIM Module

Growing Market
- Increased demand for contact-free sensing as well as hygiene issues and favorable programs deployed by the government.

Results: Overall Accuracy of 96.7%

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