

ECE 153B
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Project proposal

<https://sites.google.com/view/ece-153b-w2021-z-huang>

My design for my project is a combined Bluetooth controlled table light and room temperature monitor. The table light which is 220V is controlled by a 5V relay that connected to the Nucleo board peripherals pin. The control GPIO pin can be set by the signal from the HC05 Bluetooth transmitter. Any Bluetooth enabled devices such as computers and smartphones can connect to the HC05 transmitter and send commands to the board. Meanwhile, the HC-05 Bluetooth transmitter will send back the status of the relay to the smart device that allows the user to know the real-time status.

In addition to the Bluetooth transmitter, there is a light sensor connected to the board which generates a DO signal(0 or 1) based on the environment light. There is a threshold value that can be set on the light sensor such as the brightness value that the sensor detected overpass the threshold value, the sensor will send a pulse to the GPIO pin. Users can choose operation mode between automatic and manual. The automatic mode will turn on and turn off the table light based on the environmental light and manual mode allows users to control the table light by smart devices.

Lastly, a TC-74 temperature sensor is connected to the board that will measure the room temperature and sends it back to the smart device.

