

PIXEL

Design Review 2 - List of Subsystems

3/5/2025

1. Camera Control and User Interface

a. Photo capture

- i. Button to take picture
- ii. Button to delete picture
- iii. Live viewfinder on LCD at startup
- iv. If an image is taken and not deleted in 5 seconds, the display returns to the viewfinder
- v. If the image is taken and not deleted in 5 seconds, the image is saved to the SD card
- vi. If the image is taken and deleted with the delete button, then the display returns to viewfinder mode

b. Laser Outline

- i. Four laser lines powered in parallel with 3.3V; lasers arranged in a box frame around the camera lens.

c. Flash

- i. LED flash driver powered with 3.3V.
- ii. Driver is controlled with a PWM signal from a microcontroller (ESP32 C6 used in example).
- iii. A potentiometer adjusts the frequency of the PWM and changes the brightness of the LED.

d. Button to switch between bluetooth and Wifi

- i. Bluetooth remote connects when bluetooth is turned on and can push button to turn bluetooth off and turn wifi on → connect to ND-guest

2. Power

- a. Battery voltage continuously monitored by ESP32
- b. LED to indicate low battery

3. Cloud

- a. Photo uploaded to Google Drive through upload to web server and then python script
- b. Photos viewable on Senior Design website
- c. AI algorithm to sort uploaded photos using a dictionary