Satisfied Requirements:

Camera and Imaging Requirements

1. The camera must be able to take a picture when a certain button on the camera is pressed.
2. The camera must be able to display the correct image after capture on the screen.
3. The pictures taken on the camera must be an accurate representation of the field of view and color that the user sees through the viewfinder.
4. The camera must be able to correctly outline the field of view of the camera with lasers for remote image taking.
5. The camera must be able to take a picture with reasonable clarity (5 MP, 2560 x 1920 pixels) while still being within the processing capabilities of an ESP32 [1].

Connectivity and Data Management

6. The camera must be able to connect to WiFi.
7. The camera must be able to connect to Bluetooth when a user tries to search for Bluetooth devices.
8. The camera must be able to send a captured image over WiFi to a cloud-based platform (website or app).
9. The pictures must accurately be received over the WiFi (correct color, field of view, image type).
10. Users must be able to access the website or app.
11. If a website is used, it should be easily accessible. If an app is used, the user should be able to download it to their own personal device, such as an iPhone. Either interface should be user friendly.
12. The website must be able to use an AI facial recognition algorithm to group together images of the same person.
13. The website must display separate albums for the people who appear in multiple photos.
14. The AI facial recognition algorithm must be adequately trained so that it avoids as much bias in identification as possible.
15. The website should also have an option that allows the specified users to view all of the images shared with them, even if they are not in that exact photo or the photo is not of people.

Power and Indicator Requirements

16. A battery should be able to power the microcontroller, lasers, LEDs, and flash. 3.7 volt lithium ion batteries in series should be utilized.
17. The camera battery must be able to be safely recharged.
18. There must be an LED to indicate when the camera battery is low.

19. The camera electronics must not overheat or discharge too much heat that it is uncomfortable to the user.
20. The charging LED should turn off when the device is removed from the charger (the indicator on the battery charger turns off when the battery is removed).
21. The battery life of the camera must be on par with other cameras, lasting at least 3 hours.

Safety and Accessibility

22. The laser outline must be visible to the people in the self-taken image.
23. The lasers must be Class IIIA (between 1 mw and 5 mw) for eye safety [2].
24. Lithium ion batteries should be used for charging and user safety.
25. The buttons on the camera should be labeled so that the user knows which one corresponds to which functionality.

Practicality of Device

26. The buttons must be easily pressed by the user.
27. The camera and cloud client communications must not interfere with other WiFi transmissions.
28. The camera must be able to stand up on its own so that the user can walk away and take the image with the remote control.
29. The batteries can be recharged with a pre-existing charging cord or device.
30. The camera should be comfortable to hold and use. The buttons must be in convenient locations so the user can press them while also looking at the screen or viewfinder.
31. The camera must have an adjustable flash that can be controlled with a potentiometer by the user.
32. The flash must go off right after the user presses the button to take the image.
33. The flash must be able to be turned completely off.
34. The flash brightness must correctly correspond to the dial turn on the potentiometer.
35. The camera must be able to save captured images to an SD card if the user chooses to do so.
36. The camera must be able to take images and save them to an SD card even when it is not connected to WiFi.
37. The user must be able to press buttons to decide to upload an image to the website or to delete it, and the camera should either begin sending the image data or delete the image.
38. The remote control must be able to interface with the camera from up to 25 feet away [7].

Additional Camera Features

39. The camera must be durable enough to withstand small water droplets and be placed in a bag.
40. The camera must be able to correctly outline the field of view of the camera with lasers.

Satisfied Requirements with Edits:

Camera and Imaging Requirements

41. An ~~OLED~~ LED screen should preview the image before it is taken.
42. The user must be able to ~~press a button~~ use a switch to enable the laser frame.
43. The camera must be able to take a picture when the button on ~~a remote control~~ an app is pressed.
44. The ~~remote control~~ app must be able to send a signal over Bluetooth in real-time when its button is pressed.

Power and Indicator Requirements

45. ~~There must be an LED to indicate when the camera is fully charged~~. There is not an LED to indicate that the camera is fully charged. There is an LED that indicates that the camera has low power, and there are indicators on the actual charger for the batteries that show when the batteries are fully charged. Because of these indicators, an LED on the actual camera showing that it is charged was not necessary (the actual batteries are recharged, not the whole camera itself).

Additional Camera Features

46. ~~There must be an LED that indicates when an image is taken.~~ There is not an LED, but the flash goes off and the screen stops the live view, making it clear that the image has been taken.

Connectivity and Data Management

47. ~~A GPS device must be able to record the location when an image is taken.~~ A GPS device is no longer being used because it would not record the location indoors, which is where the camera will often be used.
48. The ~~location,~~ time and date of each image must be able to be sent over WiFi and received by the client website.
49. The ~~GPS,~~ time and date information must correspond to the correct image.

Practicality of Device

50. ~~The camera should be the same or smaller in size and weight than typical digital cameras (height - 2.4 inches, width - 4.16 inches, depth - 1.6 inches, weight - 2 lbs) [3] [4].~~ The dimensions were originally based on the small cameras found at [3] and [4]. While going through the design process and incorporating all of the desired features, it made more sense to have a bigger frame, which is still on par with some existing digital cameras.