

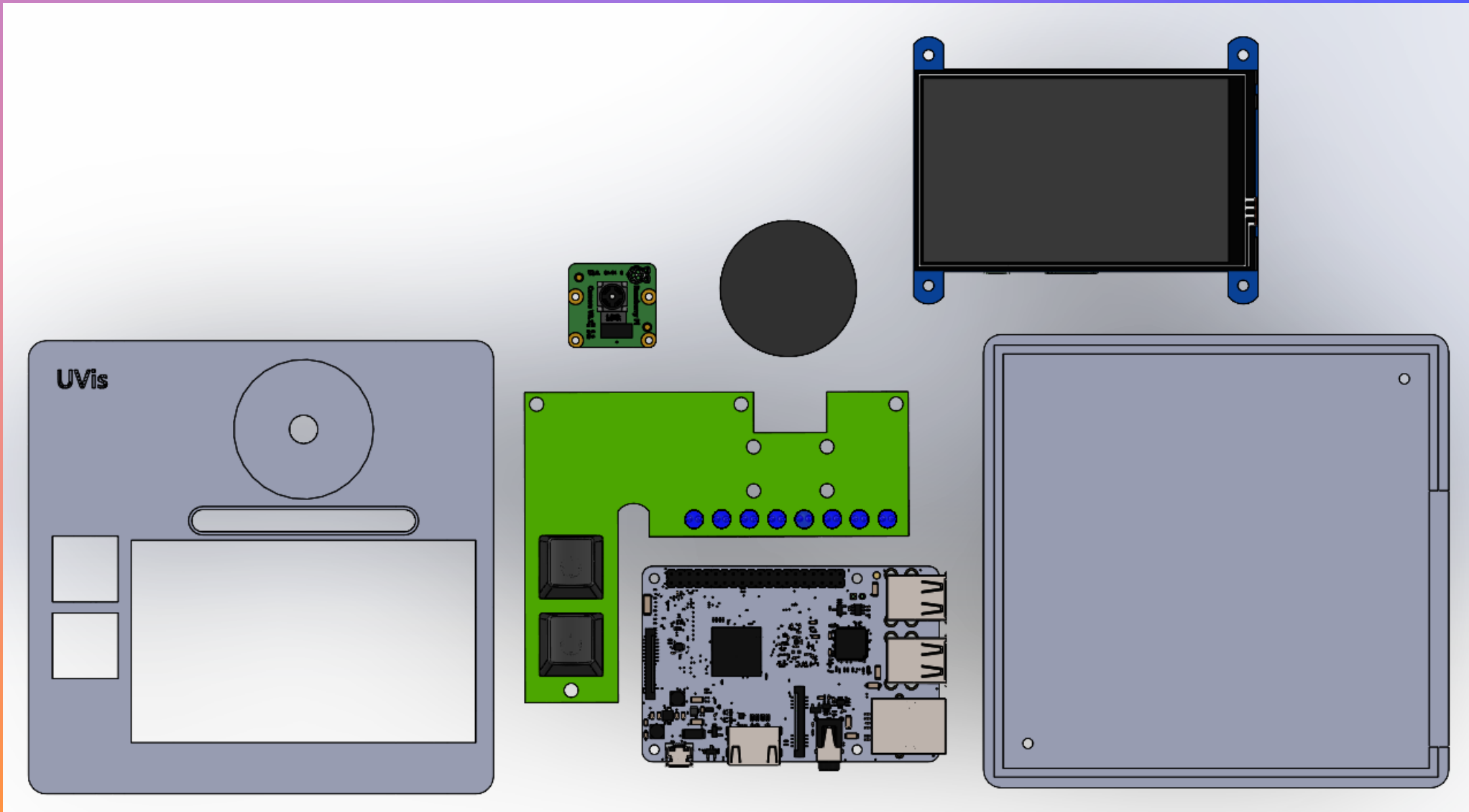


UVSHIELD

Final Presentation

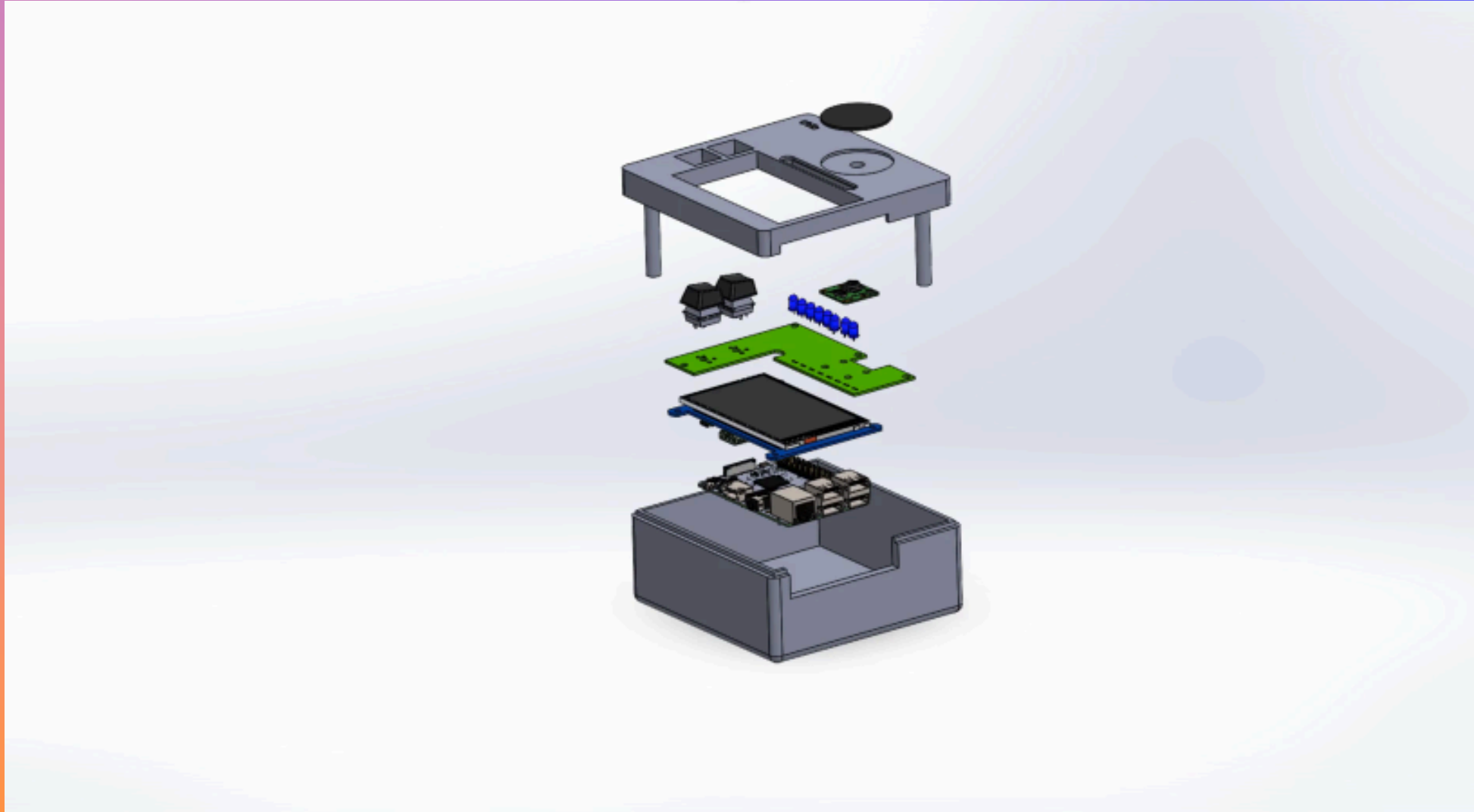
DEVICE CONSTRUCTION

2



DEVICE ASSEMBLY

3



DEVICE FLOW CHART



1. Boot Process

- Completed as intended, device properly boots to our logo, loading bar, then to the live video feed.

2. Proper UV filtration +

- The device displays areas that are properly covered by sunscreen successfully.
- Powerful filter made for indoor use difficult as video brightness was affected.

3. UV LEDs

- UV light bar was implemented as intended.
- Lights are not as powerful as hoped with the final UV filter.

4. Application Multiprocessing

- Able to successfully run live video feed, GPIO, and touch screen inputs at the same time.



1. Handling multiple processes⁺ ●
 - Software application had to run a video feed, touch screen functionality, and GPIO input/outputs at the same time.
 - No prior experience with multiprocessing.
 - Found success by using threads, a topic taught in COP4600 – Operating Systems.

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2. Adjusting the device's boot process

- Boot process was slow and displayed a blank screen which may indicate to a user that the device has frozen.
- Removing Raspberry's boot logo, adding our own designed logo, and adding a loading bar to show end users that the device was working on loading up.
- Found success by researching Linux file changes, used experience from OS.

3. Building a case from scratch ⁺ ●
- No prior 3D printing experience.
 - Measurements had to be accurate down to the millimeter for aligning holes on hardware so that it could be put together appropriately.
 - Found success by taking the time to slowly build the final case design based on implemented hardware.

1. Team Collaboration

- Why?
 - 5 members
 - Some members lived an hour away from one another
 - Only one device to start with
 - Remote work was difficult
- Resolution:
 - Ordered a second set of components so that more than one person could work on hardware at a time.
 - Set up consistent days where the team could meet to handoff needed hardware.
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2. Prototyping costs / time consumption

- Why?
 - Had to test numerous filters before determining the right one.
 - 3D printing was time consuming, expensive, and had flaws.
- Resolution:
 - Spent more time than we originally planned testing UV filtration and doing research on UV/IR spectrums.
 - Sourced 3D printing through friends, rather than UF's library.

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3. Hardware Hurdles

- Why?
 - Original Raspberry Pi Zero's computer power was not enough once more features were added to the project.
 - Raspberry OS software corrupted twice having to defrag, repair, and reinstall software on SD card.
 - Multiple UV filters proved to not do as specified.
- Resolution:
 - Obtained a Raspberry Pi 3 B+ with more computing power.
 - Used a Kolari UV filter, more expensive but highly trusted UV filter company.

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Thank you!