

# Pre-alpha Build

## Architectural Elements

### External Interfaces

Interfacing with the Nvidia Jetson is done through either physical peripherals (keyboard and mouse) or ssh through a local network system. The monitor can be used to display intermediate images as well as the final stitched image.

### Persistent State

The intermediate images are saved to a file (capture0-2.png). They are then stitched, together, and the stitched image is saved (stitchedImage.png)

### Internal Systems

Python program structure:

- The program first opens each video camera using the openCV function "VideoCapture"

- It then reads from each camera, and stores each image into an array. These separate images are then saved to a file (capture0-2.png)

- It then uses the "createStitched" function and "stitcher.stitch" from openCV to stitch the 3 images

- The stitched image then gets saved to a file. (The persistent state)

## Information Handling

### Communication

USB 2.0 protocols are utilized for direct connections between the cameras and the Nvidia Jetson. HDMI protocol is used for the monitor.

## Integrity & Resilience

Error detection is currently being done manually through visual evaluation of the final stitched deliverable against the individual images. In the future, we can create tests to catch such discrepancies.

Network intrusions are being handled by the ssh terminal's requirements for the user login credentials. A private VPN to increase the security level of the connection that allows us to interface with the Jetson can be implemented.

# Demo Images

## 3 Camera Images



## Stitched Image

