

Mhacks 2025 Project Details: Vision Alignment Tool

V 1.0



Project Statement

Background:

- In the field vision systems being bumped/moved, lighting changed, and sharpness/focus being lost are affecting the accuracies of the systems.
- This drives the increase of false failures but more serious the false passes.
- There is no true system to guide people to align the current vision back to the original master. The master images is the foundation of the models.
- Secondary activity quick grading tool to ensure master image has good contrast and focus.

Purpose:

- Tool that allows the upload of the master image to then be overlaid to misaligned image.
- This will allow feedback to the user of how aligned the current image capture of the system matches the master.
- This is a closed looped feedback to show the user how to get the vision system aligned to the original set up of the system.
- Make sure that master image meets basic requirements prior to being set.

Deliverables:

- Master image feedback showing contrast and focus are good.
- Feedback to the user for directional movement being left/right, up/down, tilt, and rotation that compares to the master.
- Feedback of how the lighting/contrast compares to the master.
- Feedback of how the sharpness/focus compares to the master.
- Distance of the object to the system compared to the master.
- Easy feedback to the user in the form of percentage match or outline red/green.

Supplies

What can be supplied for development.

- Standard POE camera used in our lab.
- POE injector
- Manfroto arm.
- Contrast block for targeting.
- Cables for set up.

