

Ford Workshop – Image Alignment Tool

V 1.0



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References

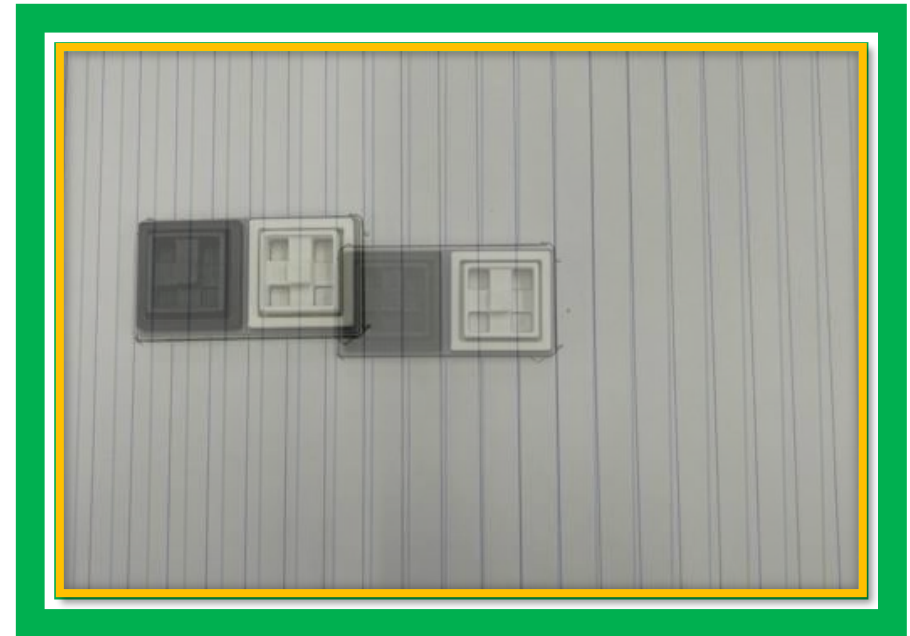
Project Overview

What are we looking for...

- Application that uses a master image to give intuitive feedback to the user if the current image is different.
Shows what is different and helps the user place the image back as close to original as possible.

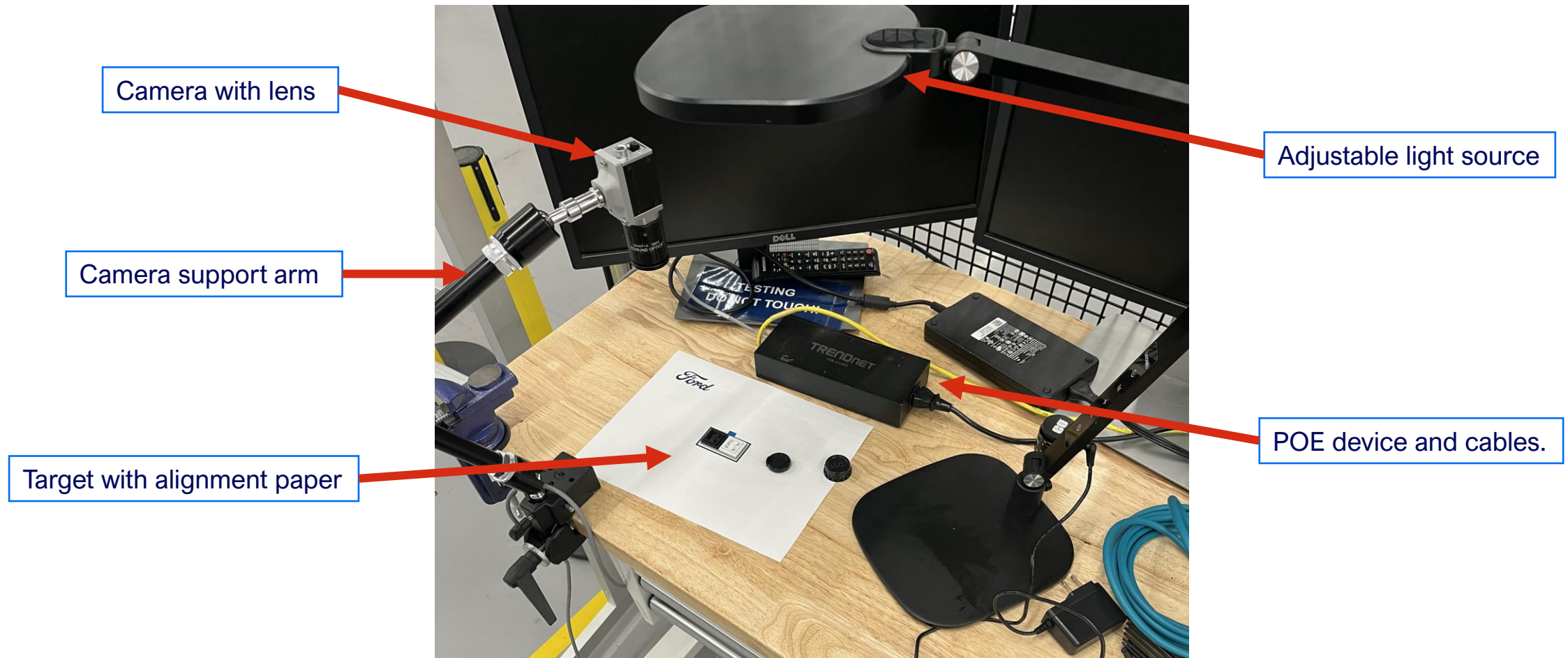
We will be grading on the key points below:

1. Contrast.
2. Focus/sharpness.
3. Position/orientation.
4. Zoom.
5. Angle



Workstation Setup

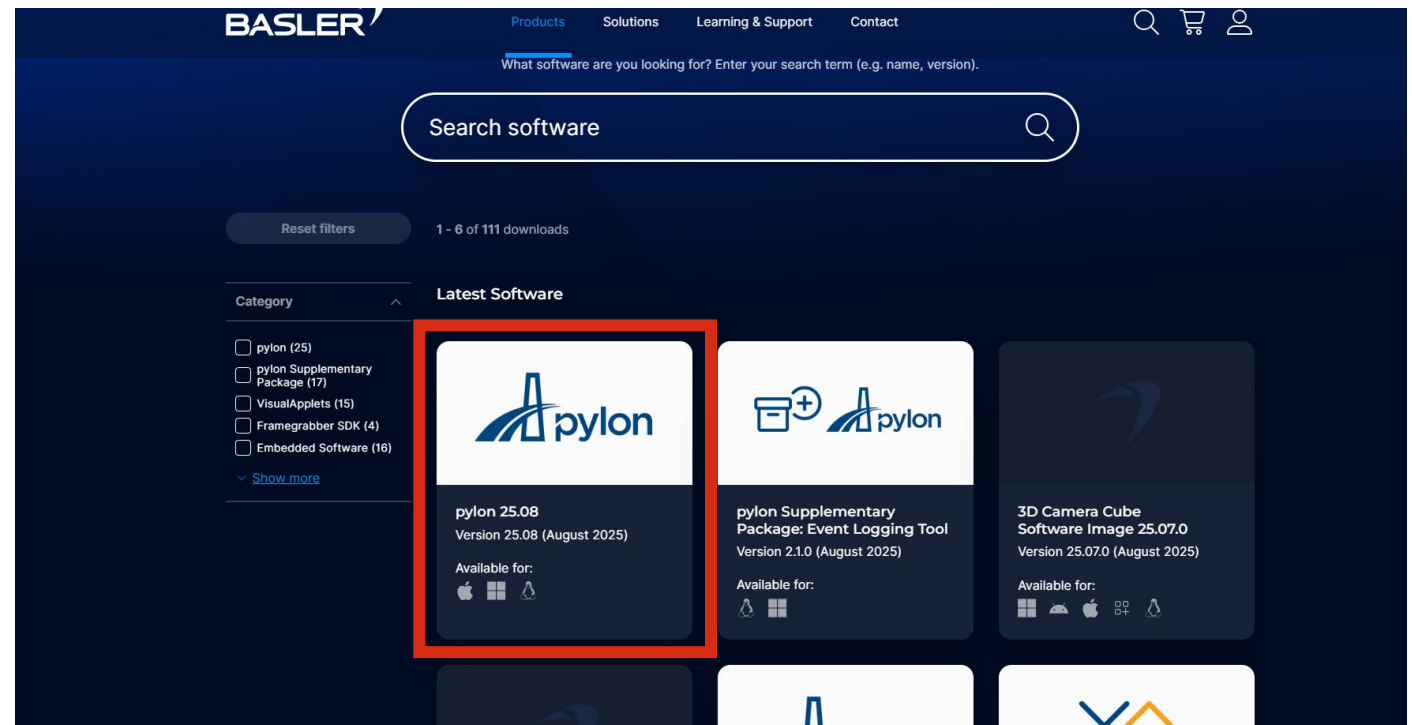
What is in each workstations for development



Software Needed

Link: [Download Basler Software | Basler AG](#)

- Please use the software highlighted in the red box to the right



Software Navigation: Camera Connection

Connecting to the camera.



- 1) Connect available ethernet connection to your computer.
- 2) Wait a moment and inside the pylon software you will see a camera appear under the GigE. Double click on the camera.
- 3) Once connected the camera will turn bold and the camera/video recording symbol above will turn blue.

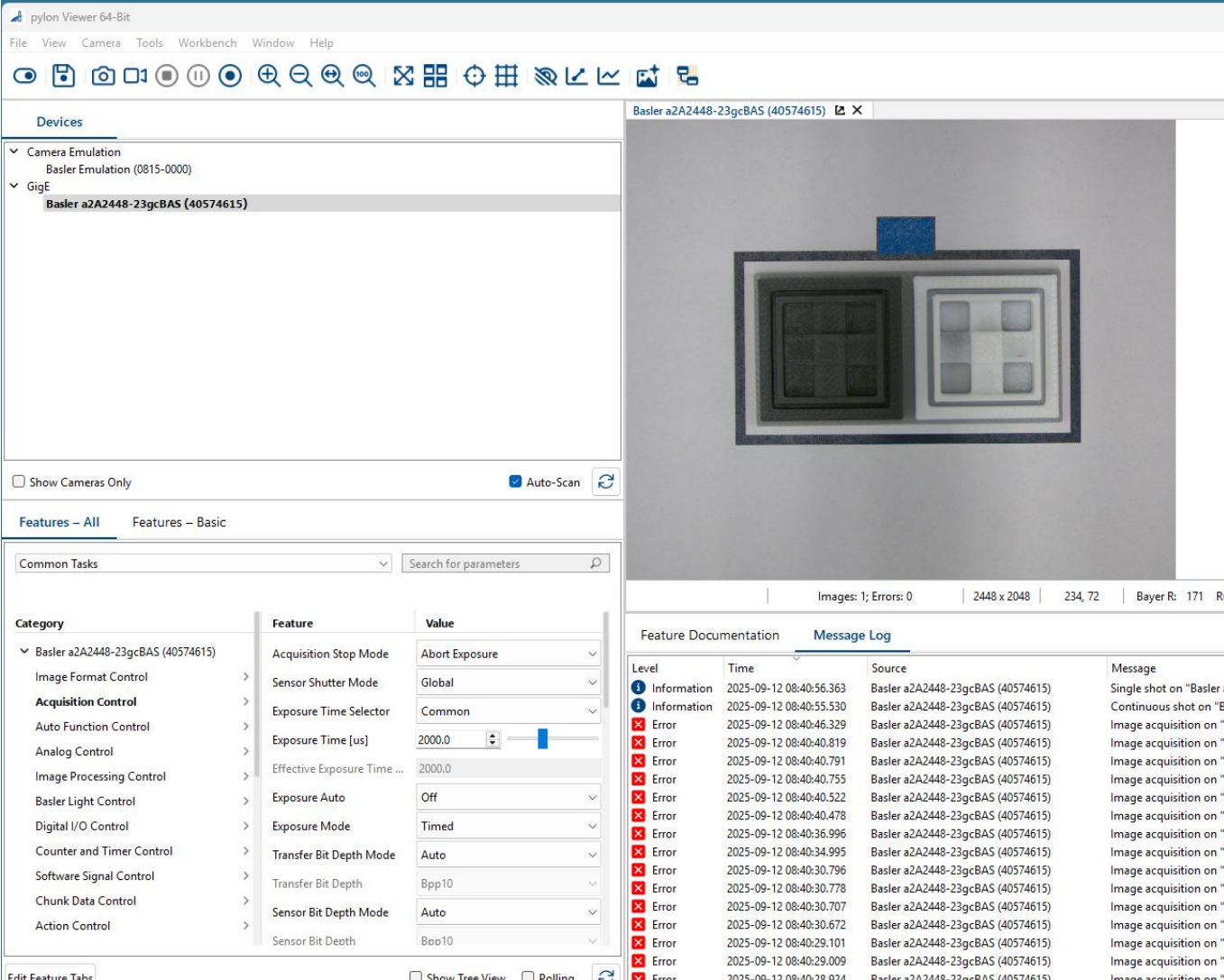
Basler

Level	Time	Source	Message
Information	2025-09-16 12:51:40.346	Basler a2A2448-23gcBAS (40574615)	"Basler a2A2448-23gcBAS (40574
Information	2025-09-16 12:51:34.489	Basler a2A2448-23gcBAS (40574615)	"Basler a2A2448-23gcBAS (40574
Information	2025-09-16 12:51:30.805	Basler a2A2448-23gcBAS (40574615)	"Basler a2A2448-23gcBAS (40574
Information	2025-09-16 12:51:30.788	Basler Emulation (0815-0000)	"Basler Emulation (0815-0000)" h
Information	2025-09-16 12:51:30.270	pylon Viewer	pylon Viewer 9.1.0.16414 64-Bit h

Software Navigation: Live View

Live view to make adjustments for different cases.

- 1) To start a live view press. 
- 2) On the right you'll see the live image. This will help is aligning or changing conditions.
- 3) Pressing this button  will make the view take up the full screen.



The screenshot shows the pylon Viewer 64-Bit software interface. The top menu bar includes File, View, Camera, Tools, Workbench, Window, and Help. Below the menu is a toolbar with various icons for camera control and image processing. The main window is divided into several sections:

- Devices:** A list of connected devices, including Camera Emulation (Basler Emulation (0815-0000)) and GigE (Basler a2A2448-23gcBAS (40574615)).
- Features - All:** A list of camera features and their current values, such as Acquisition Stop Mode (Abort Exposure), Sensor Shutter Mode (Global), Exposure Time Selector (Common), Exposure Time [us] (2000.0), Effective Exposure Time (2000.0), Exposure Auto (Off), Exposure Mode (Timed), Transfer Bit Depth Mode (Auto), Transfer Bit Depth (Bpp10), Sensor Bit Depth Mode (Auto), and Sensor Bit Depth (Bpp10).
- Live View:** A large window on the right showing the live image from the camera. The image shows a dark, rectangular object with a grid pattern, likely a camera sensor or a test target.
- Message Log:** A table at the bottom right showing the status of image acquisition. It includes columns for Level, Time, Source, and Message. The log shows multiple "Error" messages, indicating that the image acquisition is failing.

A red arrow points from the text "Pressing this button" to the "Full Screen" icon in the toolbar.

Software Navigation: Taking an Image

How to take a photo and save it.

- 1) To take a single photo press
- 2) Updated image will show to the right.
- 3) Press the save icon.
- 4) File location window will pop up. Save the image as needed.

Note: We would like for this to be your own design.
This is just a basic step to get an image.

The screenshot displays the pylon Viewer 64-Bit software interface. The top menu bar includes File, View, Camera, Tools, Workbench, Window, and Help. Below the menu is a toolbar with various icons for camera control and image processing. The main window is divided into several sections:

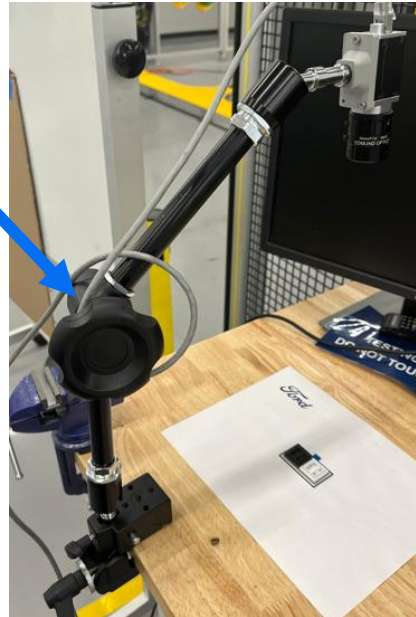
- Devices:** A list of connected cameras. Under 'GigE', the camera 'Basler a2A2448-23gcBAS (40574615)' is selected.
- Image Feed:** A large window on the right showing a live image from the selected camera. The image shows a blue object on a white background, with a black frame overlaid.
- Features - All:** A section on the left showing a list of camera features and their current values. The 'Common Tasks' tab is active, showing a search bar and a list of features.
- Feature Documentation:** A section on the bottom right showing a table of feature documentation.

Level	Time	Source	Message
Information	2025-09-12 08:40:56.363	Basler a2A2448-23gcBAS (40574615)	Single shot on "Basler a
Information	2025-09-12 08:40:55.530	Basler a2A2448-23gcBAS (40574615)	Continuous shot on "B.
Error	2025-09-12 08:40:46.329	Basler a2A2448-23gcBAS (40574615)	Image acquisition on "I
Error	2025-09-12 08:40:40.819	Basler a2A2448-23gcBAS (40574615)	Image acquisition on "I
Error	2025-09-12 08:40:40.791	Basler a2A2448-23gcBAS (40574615)	Image acquisition on "I
Error	2025-09-12 08:40:40.755	Basler a2A2448-23gcBAS (40574615)	Image acquisition on "I
Error	2025-09-12 08:40:40.522	Basler a2A2448-23gcBAS (40574615)	Image acquisition on "I
Error	2025-09-12 08:40:40.478	Basler a2A2448-23gcBAS (40574615)	Image acquisition on "I
Error	2025-09-12 08:40:36.996	Basler a2A2448-23gcBAS (40574615)	Image acquisition on "I
Error	2025-09-12 08:40:34.995	Basler a2A2448-23gcBAS (40574615)	Image acquisition on "I
Error	2025-09-12 08:40:30.796	Basler a2A2448-23gcBAS (40574615)	Image acquisition on "I
Error	2025-09-12 08:40:30.778	Basler a2A2448-23gcBAS (40574615)	Image acquisition on "I
Error	2025-09-12 08:40:30.707	Basler a2A2448-23gcBAS (40574615)	Image acquisition on "I
Error	2025-09-12 08:40:30.672	Basler a2A2448-23gcBAS (40574615)	Image acquisition on "I
Error	2025-09-12 08:40:29.101	Basler a2A2448-23gcBAS (40574615)	Image acquisition on "I
Error	2025-09-12 08:40:29.009	Basler a2A2448-23gcBAS (40574615)	Image acquisition on "I
Error	2025-09-12 08:40:28.924	Basler a2A2448-23gcBAS (40574615)	Image acquisition on "I

Using the Supplied Devices

Manfrotto Arm Adjustment

Turning this nob will allow the arm to be manipulated into other positions.



Desk Light Controls



This will allow the light color to be changed.

These will allow the light intensity to be adjusted up and down.

Cameras shutter and focus adjustments

Shutter: This adjustment dial allows more or less light to the image chip. It affects the brightness of the image.

Focus: This adjustment allows for the images to be clearer on the image chip. It affects the sharpness of the image.

