Supplemental Camera Information

Camera Interfaces

[WIP]

GigE Vision Wikipedia

Another important thing to keep in mind is that while many artistically geared software environments do work off-the-shelf with various cameras and input types (typically with UVC, more exotic cameras aren't always plug and play. Make sure you do your research before making a big purchase. If the tool doesn't exist to pull in a video feed, there are a few technologies that can route video between applications or even over the network. The most common tools are Syphon for macOS and Spout for Windows, but there are other options out there as well.

See also: CameraLink and CoaXPress

Image Enhancement

Image touch-up and Noise

[WIP]

Low light, De-noising, upscaling and other machine learning cleanup

Notes on Latency

[WIP]

For the purposes of this writeup, we'll consider latency to be the delta or time between a person's action and the response or display from the software that captures their image.

Most displays run at 60 frames per second, which means they are showing an image every (approximately) 16 milliseconds. When a camera is capturing an image, delay is introduced at several stages - the first and largest of importance is the camera's exposure time. Cameras need to leave their shutter open for a period of time to collect light on the sensor - the longer the shutter is open, the more light is collected. At 60fps, the ideal is a shutter speed of 1/60s, but shutter speeds can be longer to allow more light in for a darker environment. Additionally, latency can then be introduced by a camera's own buffering and processing, transmission to computer and subsequent writing to computer memory, and finally your own software's processing.

Some cameras that advertise "low latency" are at around 35ms, which means in a best case scenario, you're seeing your reaction almost 2 frames after you've performed an action.

Latency is especially noticable for audio applications and less so for visual. Musicians begin to have trouble with latency that is larger than 8-12ms. If you're planning on using a camera as a trigger for something like an interactive drumming station, you may find that the latency is unacceptable for certain kinds of playing.

Here is a great Reddit thread on computer vision latency

Notes on Lenses

[WIP]

Talk about the very basics of measuring a cameras field of view based on its lens. This can be good for estimating the amount of image you'll get at a given distance.

Notes on Lenses

[WIP]

Talk briefly about different lenses and mounts Microscopy? Macro? Zoom lenses

Environmental Considerations

WIP

- Notes for cameras that perform differently indoor vs outdoor, daytime vs nightttime, inclement weather performance