Hyperspectral Techniques Explained

Ву

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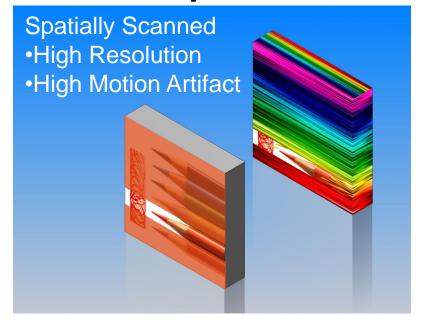
Bodkin Design & Engineering

Hyperspectral Techniques

- Scanned Hyperspectral Imagers provide extremely high resolution images by taking multiple images to construct a hyperspectral datacube. However, since multiple images are required to build the cube, motion artifacts are often created. As a result, scanned systems are unsuitable for high speed applications. The two main types are:
 - Spatially Scanned Hyperspectral Imagers which use a slit aperture to scan a scene over time to build a hyperspectral datacube.
 - **Spectrally Scanned Hyperspectral Imagers** which use a series of filters, or a single tunable filter, to capture the colors in a scene over time to build a hyperspectral datacube.
- <u>Snapshot Hyperspectral Imagers</u> capture both the spectral and the spatial information of a scene simultaneously. This method provides low spatial or spectral resolution images. However, since all the information required to build a cube is captured in a single image, motion artifacts are eliminated. As a result, images can be captured at video rates, making this technology suitable for high speed applications.

Hyperspectral Techniques





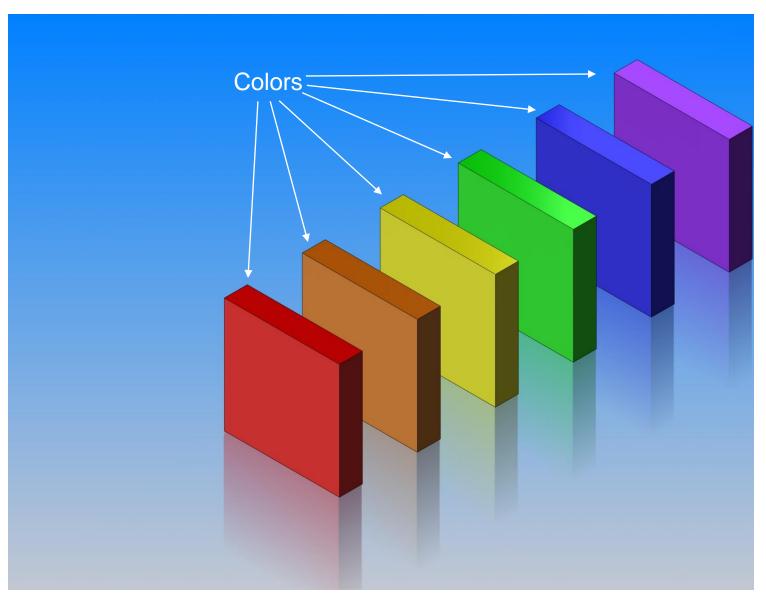


"Imager"

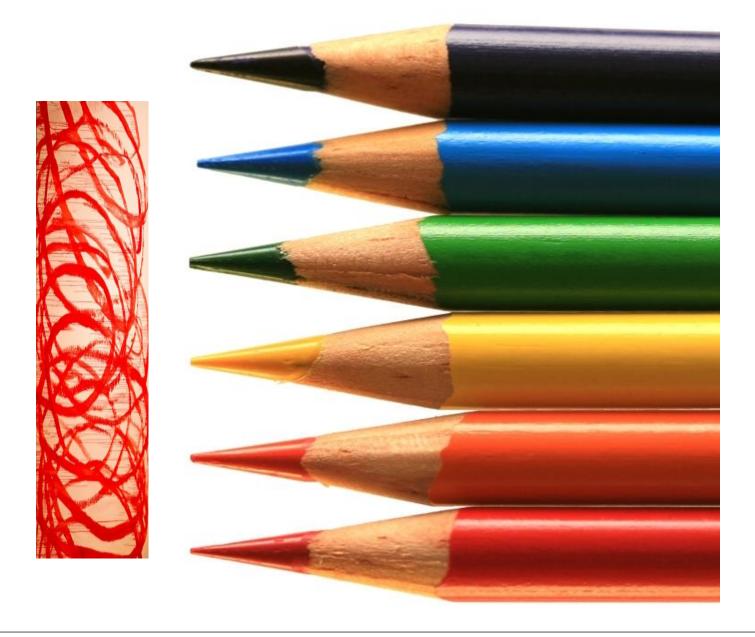


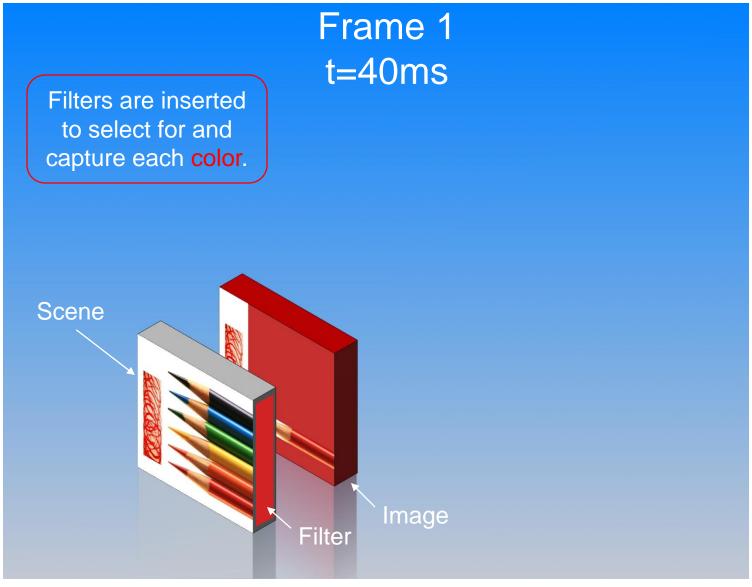
Sample Camera	Spec
Manufacturer	Lego
Exposure Time	40 ms
# of Colors Detected	6
Colors Detected	ROYGBV

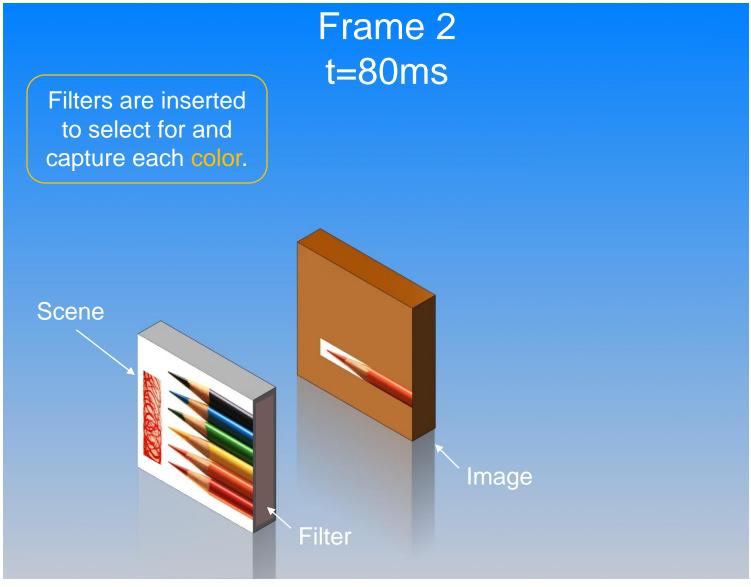
Detectable Colors

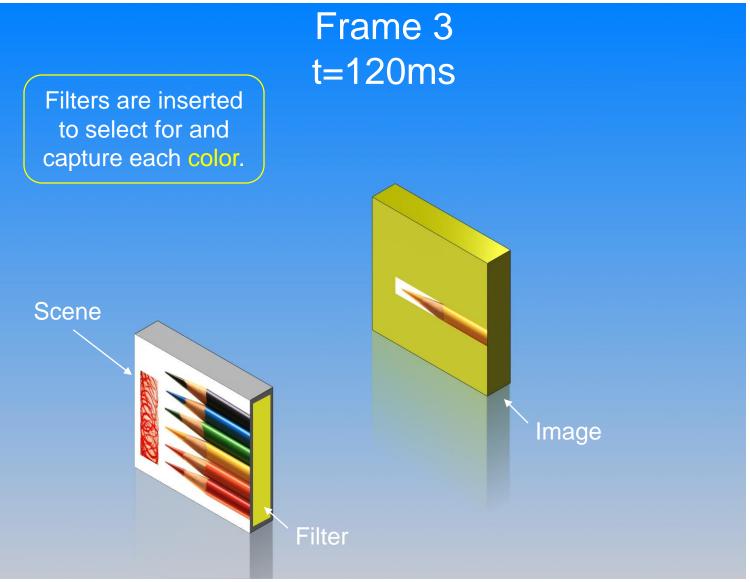


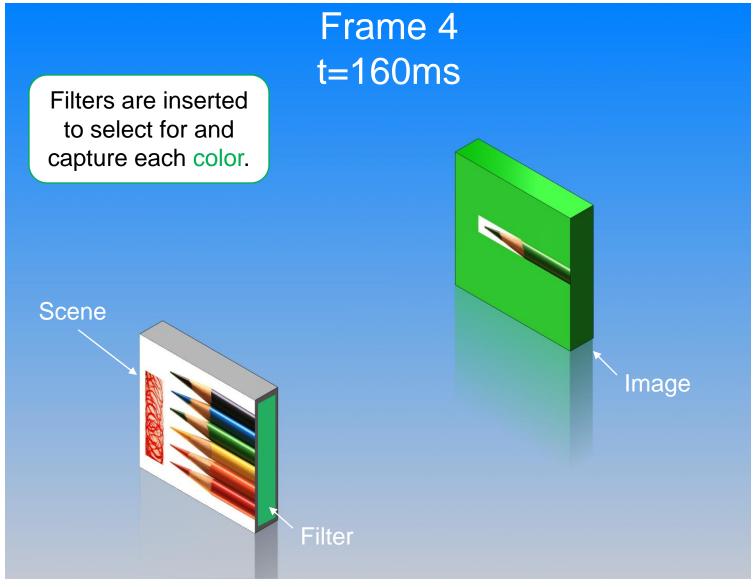
Target Scene

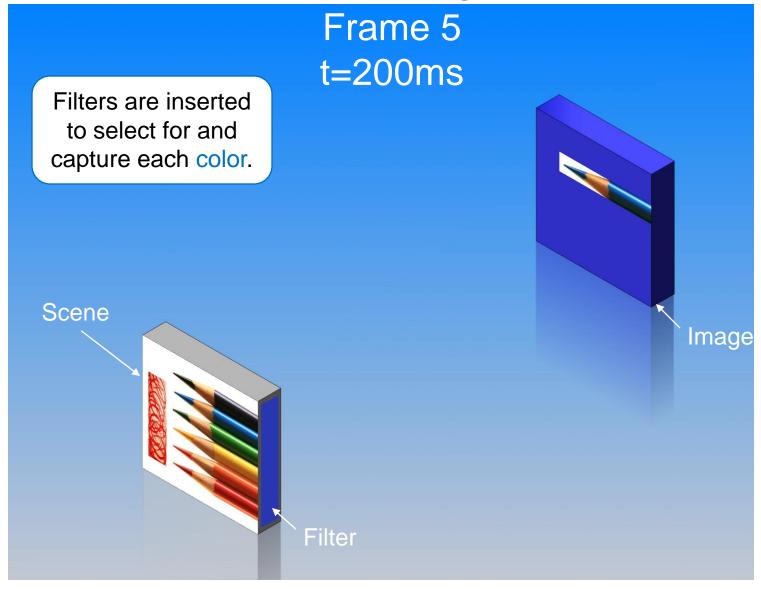


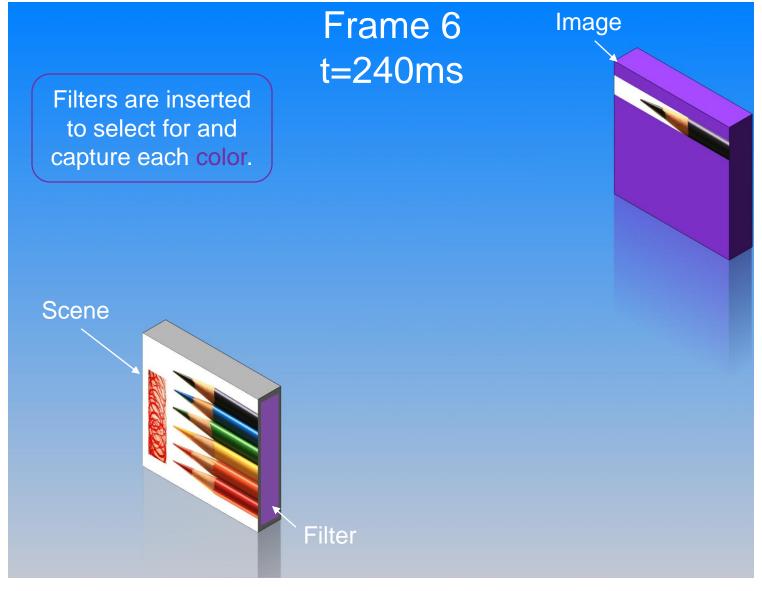




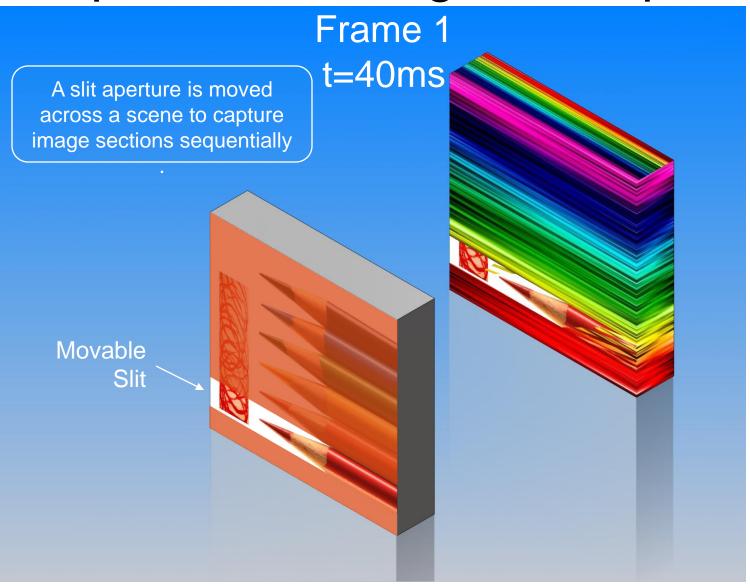


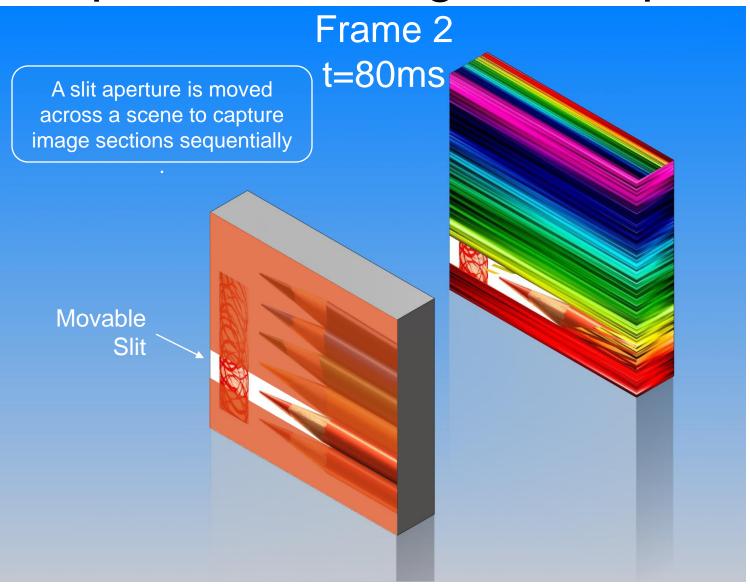


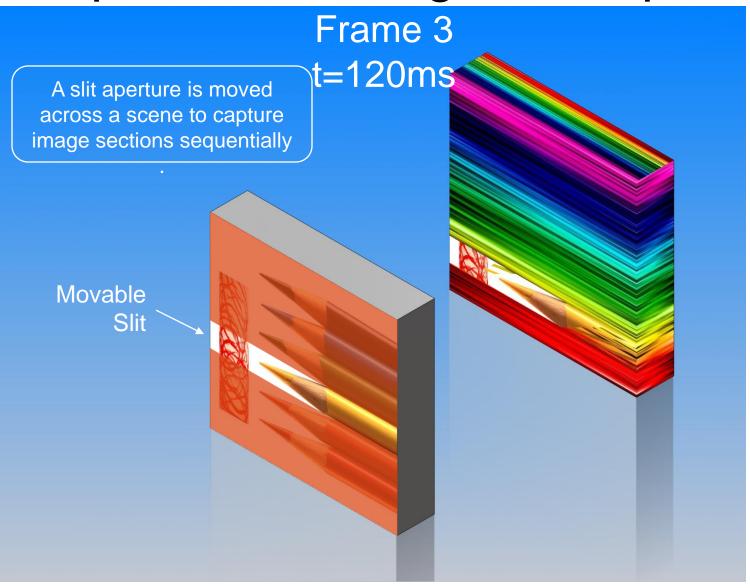


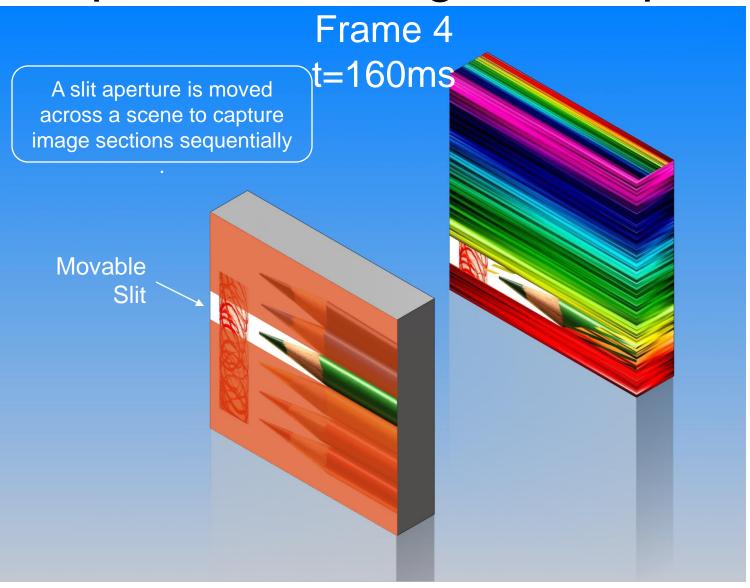


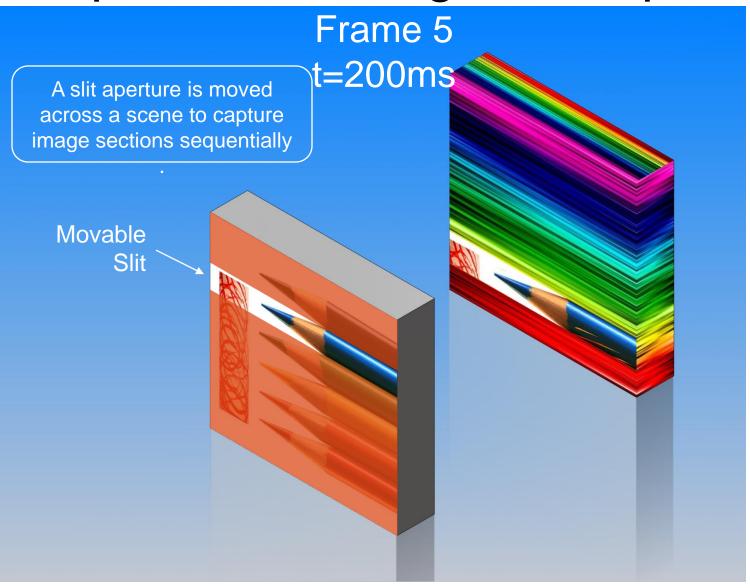


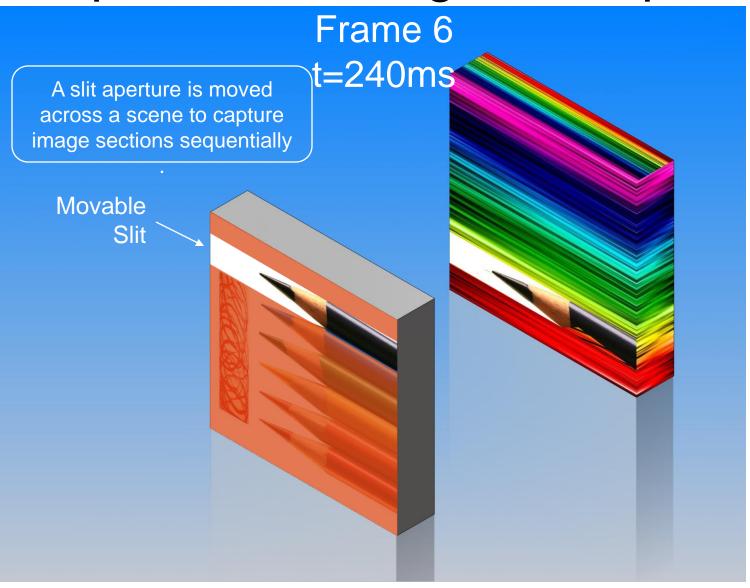






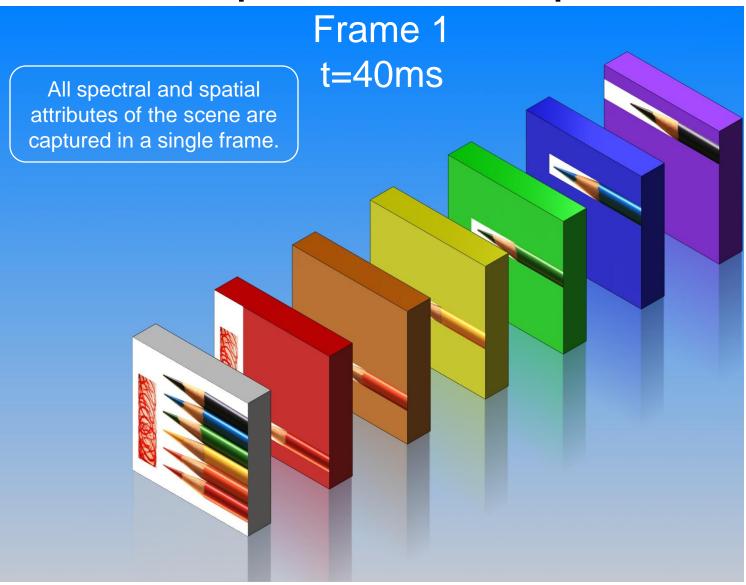








Snapshot Technique



Snapshot Technique



Conclusion

