

Modern color imaging

Michel Donnet

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CCD structure

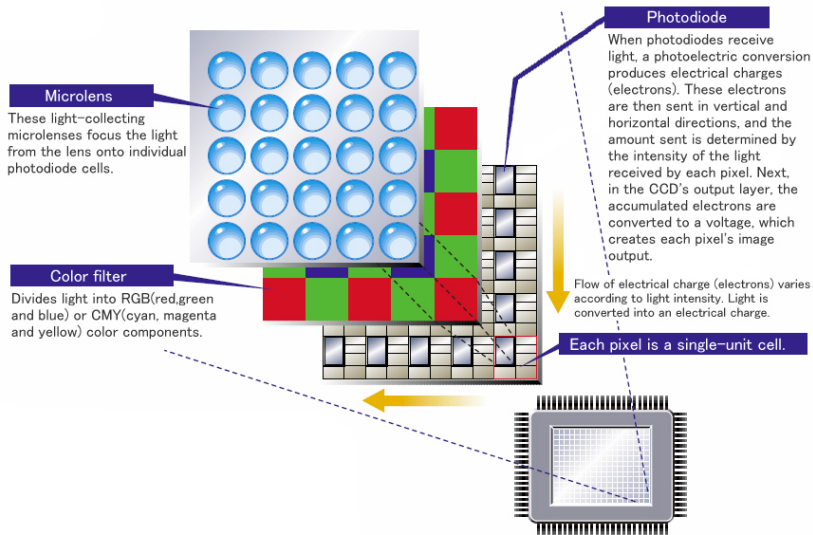


Figure 1: source: av.jpn.support.panasonic.com

New: Fovean X3 structure

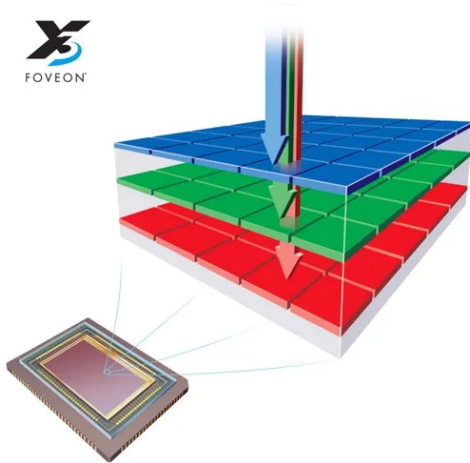


Figure 2: source: ymcinema.com

3-CCD architecture

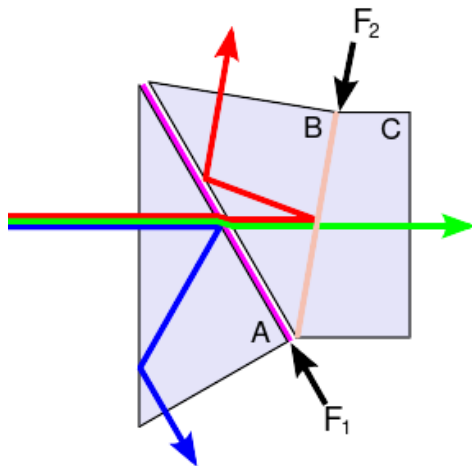


Figure 3: source: wikipedia

- ▶ pros: no light loss
- ▶ cons: expensive and difficult to produce

CCD vs CMOS

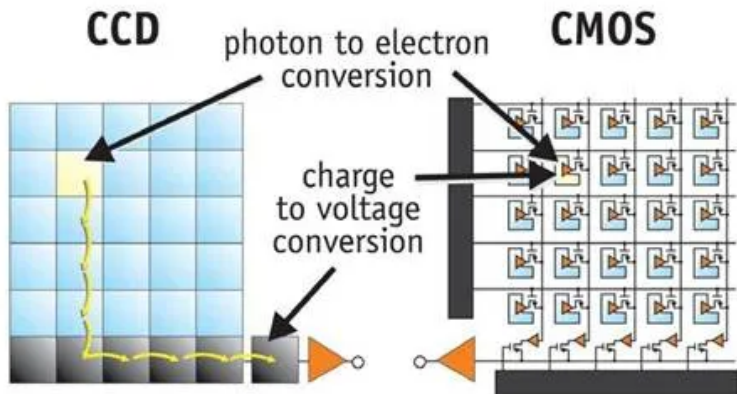


Figure 4: source: scienceshot.com

Bayer filter

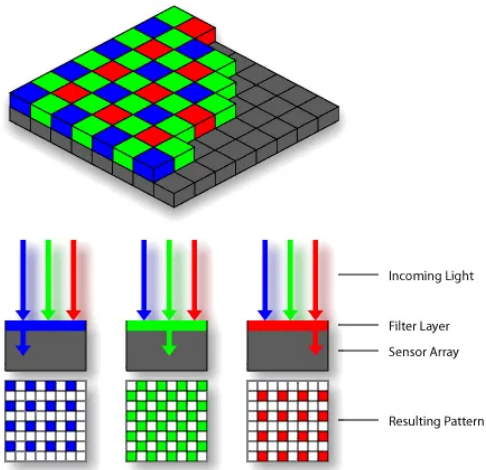


Figure 5: source: wikipedia

Other filter

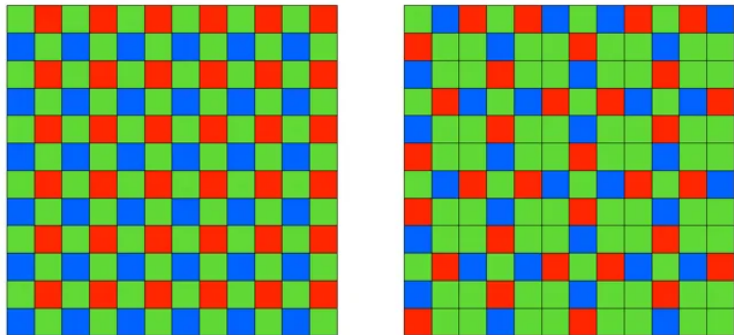


Figure 6: source: pixelcraft.photo.blog

Demosaicing: initial image



Figure 7: source: wikipedia

Demosaicing: image obtained by the bayer filter



Figure 8: source: wikipedia

Demosaicing: result



Figure 9: source: wikipedia

Demosaicing: methods

- ▶ Linear interpolation (naïve way)
- ▶ Machine-learning algorithms