Notebook
Computer Vision
CS 559
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08/24/20 - Chapter 1.docx

1. Computer Vision - Natural Images; Ex: photos, GPS, medical scanning
2. Computer Graphics - Man-made Images; Ex: cartoons, animations
3. Wavelength(λ) - $[10^{-16}, 10^{-6}]$
4. Frequency(F) - $[10^{24}, 10^{2}]$
5. $\lambda f = c = 10^{8}$

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1. Passive imaging: Uses energy sources that are already present in the scene, Ex: Light from Sun
2. Active imaging: Uses artificial energy source to probe environment, Ex: Radiation in medical field
3. Sampling: Digitizing the arguments x and y in the imaging function $f(x, y)$. Sampling is kind of like the resolution and amount of pixels.
4. Quantization: Digitizing the value of the imaging function
   (a) This determines the amount of gray levels ranging from $g = 2^0 - 2^8$.
   (b) To calculate gray bit levels: $g = 2^b$. If $g = 2^8$, then we call it an 8-bit image. For 2^b, we call it a b-bit image.
   (c) Ex: A 1-bit image only has 2^1 different gray levels: black and white
   (d) Ex: A 2-bit image has 4 colors: white, black, and 2 different grays.

   (a) This also determines RGB data. Each spectrum (red, green, blue) all range with 2^8 levels of red, green, blue. This means there are 2^{24} levels of RGB combinations or essentially 2^{24} colors

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1. RGB can be converted into CMYK (Cyan, Magenta, Yellow, Black)

09/14/20 -

1.