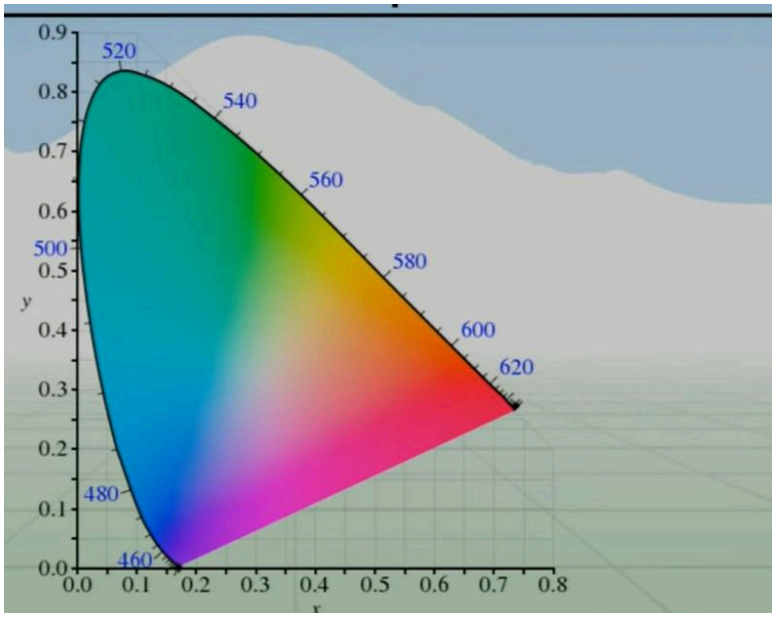
Notes from Digital Image Processing

1.There are 3 kinds of vision: a. Low level vision: this includes the basic shape and structure of the image, such as edges, gradients, segments,etc. , b. Mid level vision: these are ambiguous, and vary among experts, according to the video, panorama(image stitching), LIDAR(which is used for depth perception), timelapse. , c. high level vision: this includes image recognition, image classification, it uses machine and deep learning to do this, for example:YOL

2. Second lecture was about human vision, how eyes evolved from pit eyes, to more complex structures, how there are multiple types of cells, rods and cones for vision, how cones responsible for detecting the blue colour are less than the one detecting green, making it difficult to read blue texts even though they have same brightness. Also how colours can be made by a few numbers of different wavelengths, and how it has been exploited.



3.One of the notable things in lecture 2 was the face generation video(by NVIDIA) and how some of them looked quite realistic.
4. In lecture 3, since sensors generally record any light, a Bayer pattern filter is used to separate light into red, green, and blue components and generally these cameras have twice as many green sensors due to more response to green.
5. The color image is basically a 3D tensor, RGB matrix for each pixel and they are overlapped. We store them in an array. We also learnt about Hue, Saturation and Value(which was explained more briefly in the first lecture) and it's as important as RGB.

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Types of healthcare reports and medical imaging reports

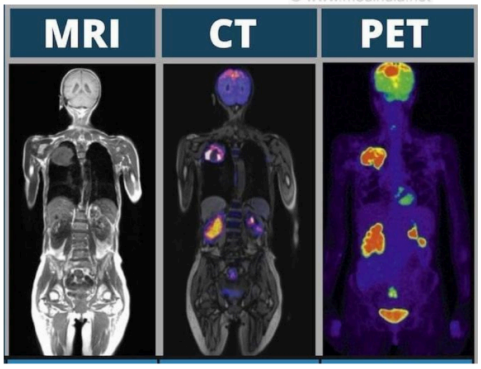
There are multiple kinds of data of patients, information like age, ethnicity, etc. Out of these, medical reports are on the most important reports while diagnosing.
There are multiple kinds of healthcare reports:

1. Diagnostic Reports These are generated by specialists or machines to provide objective data.

- Laboratory Reports: Results from blood, urine, or other fluid tests (e.g., Complete Blood Count, Lipid Panel).
- Pathology Reports: A biopsy analysis where a pathologist looks at tissue under a microscope to diagnose diseases like cancer.
- Medical Imaging (Radiology) Reports: Interpretations of X-rays, CTs, MRIs, and Ultrasounds (as detailed previously).
- Cardiology/Functional Reports: Reports from tests that check organ function, such as an ECG/EKG (heart rhythm) or a Pulmonary Function Test (lung capacity).

Medical Imaging reports(reference:DH 308 course i took this sem)

- **Medical Imaging**
  - **Modalities**
    - **X-Ray**
    - **Computed Tomography (CT)**
    - **Positron Emission Tomography (PET)**
    - **Magnetic Resonance Imaging (MRI)**
    - **Ultrasound**



2. Clinical Care Documentation These documents form the core narrative of a patient's journey. They are essential for ensuring continuity of care between different shifts and specialists. This includes Admission notes (History & Physical), daily progress logs, administered drugs, surgical (operative) narratives, and discharge summaries that outline post-hospitalization care.

3. Administrative & Medico-Legal Records These documents handle the operational and legal side of healthcare. They serve as proof of service and compliance rather than direct patient care tools. This includes billing statements, insurance pre-authorizations, medical cause-of-death certificates, and consent forms.