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Notes from Digital Image Processing

1. An image is fundamentally a 2D projection of a 3D world where each pixel records the amount of incident light at a specific point. This perspective shifts image processing from "editing pictures" to working with mathematical functions and spatial data.
2. Colors are interpreted by the brain based on the relative activation of three cone types, not on exact light wavelengths. This insight enables digital color representation using only three primaries (RGB) and explains why some spectral colors cannot be perfectly reproduced on screens.
3. While images are conceptually 3D tensors (width × height × channels), they are stored as 1D arrays in memory using layouts like CHW or HWC.
4. Methods like nearest neighbor and bilinear interpolation help resize images, but they can make images look blocky or blurry if used too much.
5. When an image is made smaller, some information is lost. That is why shrinking an image too much can make it look unclear.

Types of Healthcare Reports

- Medical History Report
- Laboratory Reports
- Medical Imaging Reports
- Pathology Reports
- Radiology Reports
- Discharge Summary
- Operative Reports
- Progress Notes
- Prescription and Medication Reports
- Vital Signs and Monitoring Reports

Medical Imaging Reports

Medical imaging reports are documents generated by radiologists after analyzing medical images such as X-rays, CT scans, MRI scans, ultrasound images, and PET scans. These reports translate complex visual data into clinically meaningful information for physicians.

A typical medical imaging report includes:

- **Patient information** (age, gender, clinical history)
- **Imaging modality and technique** (e.g., CT with contrast, MRI T1/T2 sequences)
- **Findings** (observed abnormalities or normal structures)
- **Impression or conclusion** (clinical interpretation and diagnosis)
- **Recommendations** (follow-up imaging or additional tests)

Medical imaging reports thus act as a bridge between raw visual data and clinical decision-making, making them one of the most important components of modern healthcare documentation.