[Introduction]

*) Intensity Values (0-255)

*) Pixel

51	32	90
139	75	83
2	50	17

Analog View/Image: Seeing anything through ~~Analog~~ Eyes.

Digital Image: If we capture a picture through camera

▶ Process to turn Analog to Digital:

* [Quantization and Samping.]

$I(M,N) \equiv$ [M ⇒ Row, N ⇒ Coloumn]

Grayscale Images

: Black and White images

extensions: .jpg .gif .jpeg .png → .pgm ← (gs)

↑ GIMP

For grayscale → 8 different bits required

↳ $2^8 = 256$ [0-255]

→ white increases

.ppm (for color)

.ppm → [51, 32, 90]
R G B

• Type of Processing

a) low level — I/P: image, O/P: image
b) mid level — I/P: image, O/P: features
c) high level — I/P: , O/P:

35	39	43
45	71	73
81	7	24

3x3 ⇒

41	45	47
49	76	78
86	12	29

(Gaussian Noise)

• Noises: Fluctuations in Images.

↳ Types → Gaussian Noises, Salt and Pepper Noise →

~~Additive~~ of Noise

213	87	224
93	54	219
221	217	224

[Dark turns Light, Light turns Dark]

4	87	7
93	54	219
7	8	224

PSNR- Peak Signal to Noise Ratio

↳ For judging the quality of an image.

Mid level: I/P: Image

O/P: Features → [Edge detection]

High level: I/P: Feature

O/P: Understanding.

[I/P → Datasets would be processed with various ML algo and give us some insights]

→ SR → Image Processing 3/Aug/22

Image: Two dimensional light intensity function $f(x, y)$

x and y → spatial co-ordinate and the amplitude of f at any point.

Pixel: single value of whole matrix.

Applications of Image Processing:

Processes:

a) Image Acquisition: Acquire readable image.

b) Image enhancement: Quality improvement

c) Segmentation: Feature Extraction by Division

d) Color image processing:

e) Morphological processing:

f) Representation and Description:

g) Recognition and Interpretation:

Algorithms Used

Clustering: ~~Using~~ Unsupervised Learning Algo that gathers similar data together.

Color(i,j) = (R(i,j), G(i,j), B(i,j))

✓ K-means , ✓ Fuzzy

(Lena.jpeg → all combos for grayscale image available to the fullest.

Segmentation by Threshold:

(Matlab Code for image segmentation)

```
I = imread('pout.tif');
figure, imshow(I);
figure, imhist(I);
BW = roicolor(I, 110, 255)
figure, imshow(BW)
```

Data Communication and Forwarding

CN - SKG - 4/Aug/22

Internet

William Stallings, Forouzan.
(Kurose, Ross)

⑦ Placed: ~~Respectable Int~~

① "Language": English (Spoken - Written)

② C, Python, Java - Mandatory

③ Technical Subject - ⓐ DSA ⓑ DBMS ⓒ SWE ⓓ CN - OS - COA (H/W) — Capsule ①

ⓔ AI ML - Data Science - ~~Data~~ Cloud - IOT - Cybersecurity — Capsule ②

④ Project - Capsule ⓔ

⑤ Aptitude and Programming
- Quant
- Data Sufficiency / Int.
- Verbal English
- LR

Code Snippets - Error / Output Prediction

Technical Round → Then HR Round

Read - Economic Times, Financial Express.