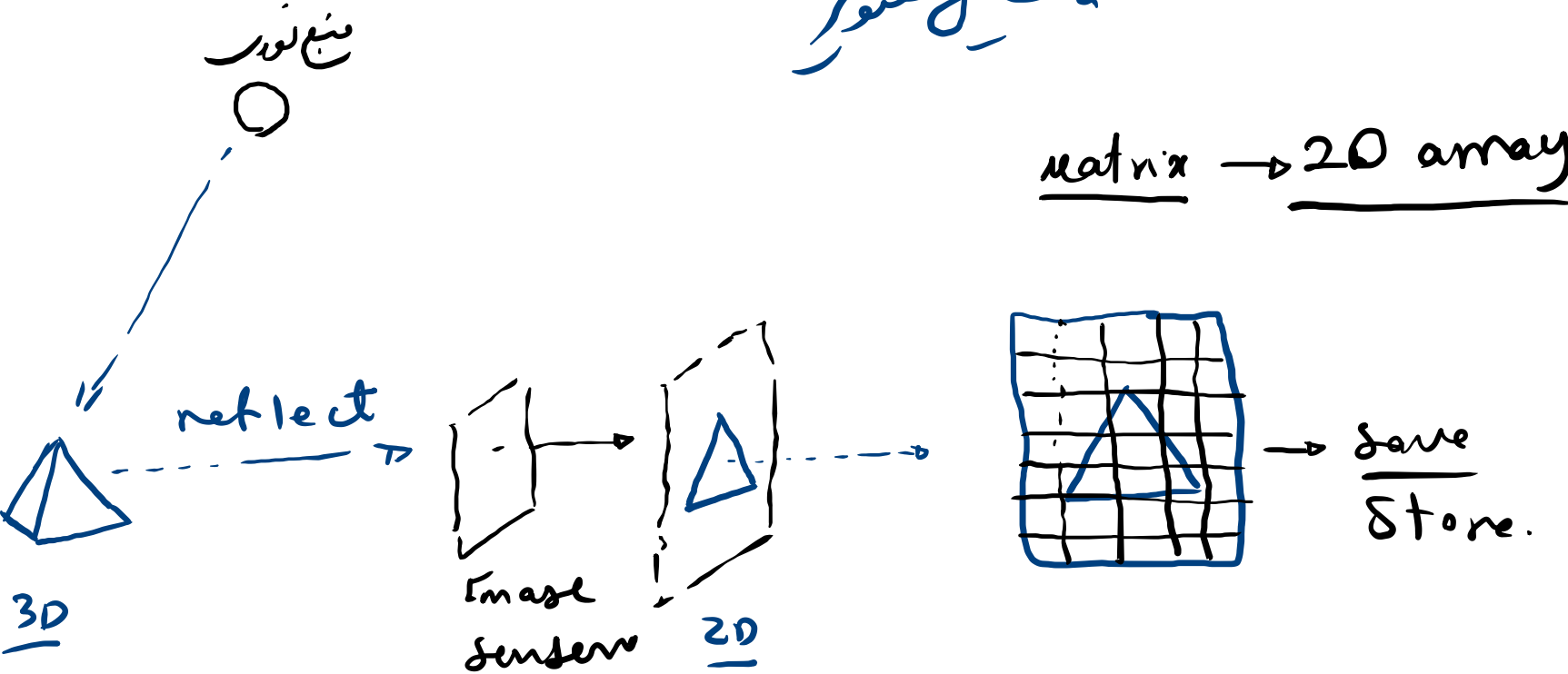
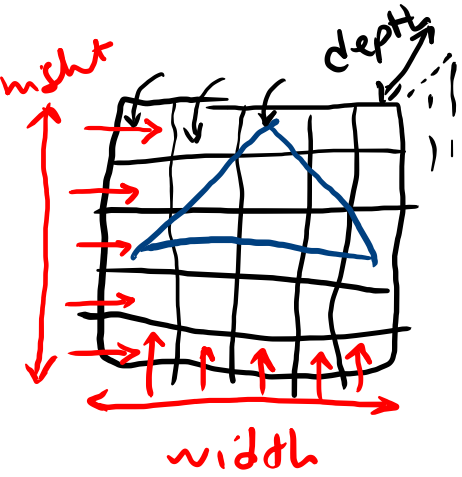

Image

تصویر: یک نگاشت دوبعدی از یک ~~حقیقت~~ سه بعدی!

واقعیت

تشكيل الصور


منبع الضوء
reflect
3D
Image sensor
2D
matrix → 2D array
save
Store.



numpy . size

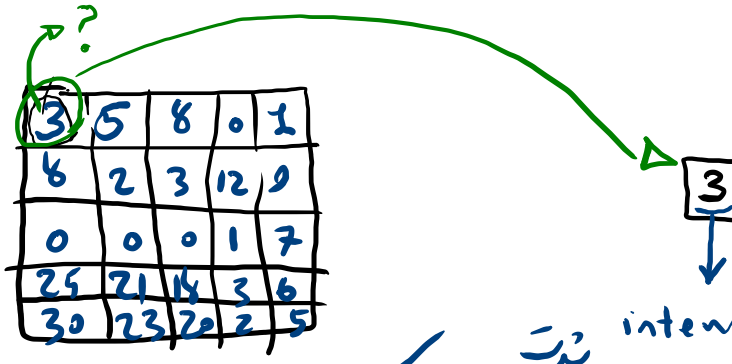
shape → (row , column)

~~shape~~ → (height , width)

2D

axis=0 axis=1

(height, width, depth)



pixel

pictures element

Pix el

intensity

شدت

مقدار نوری که در یک پیکسل

amount of light

PX

مجموع نوری که در یک پیکسل وجود دارد

0

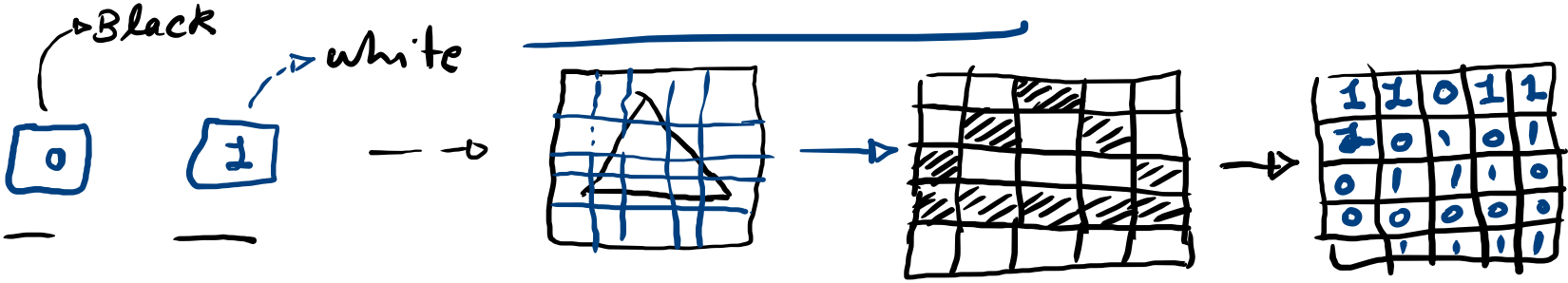
Black

1

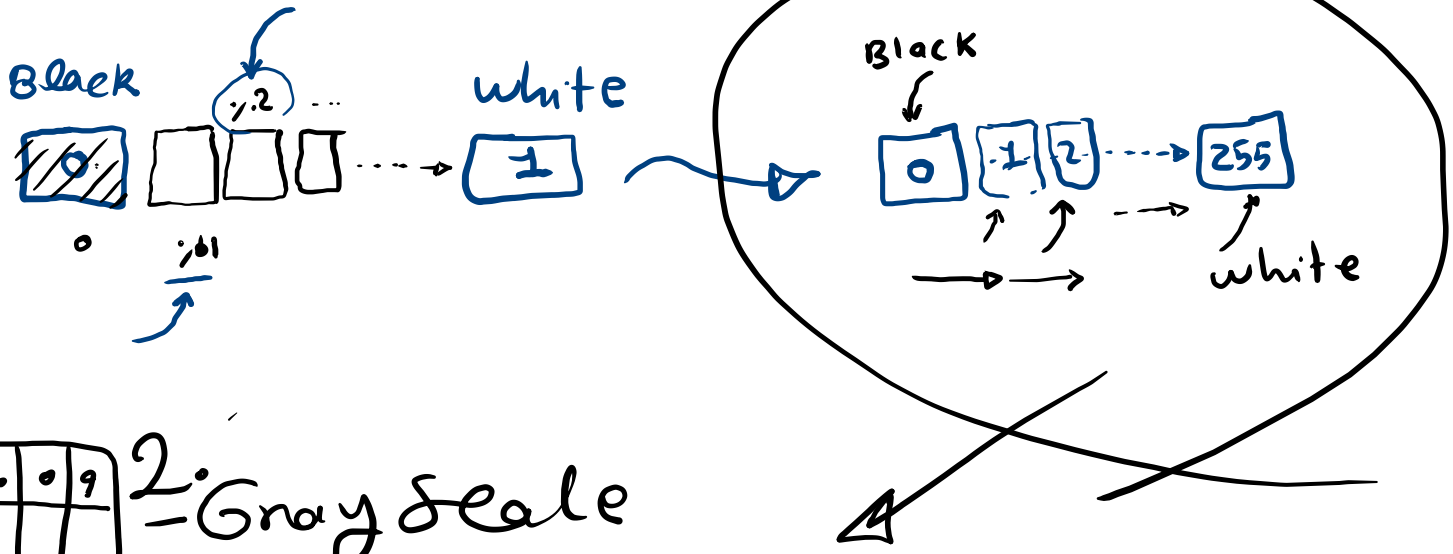
White

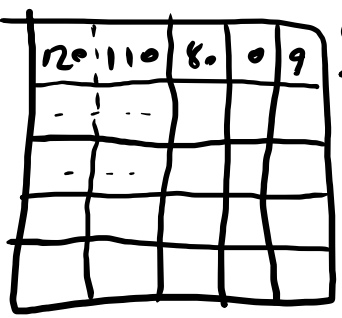
هرچه مقدار نور در یک PX بیشتر باشد

أنواع الصور



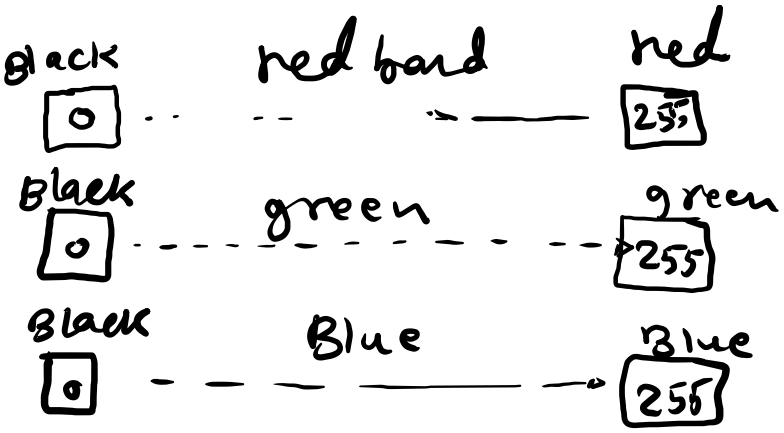
1. Binary Image.





2: Grayscale Image

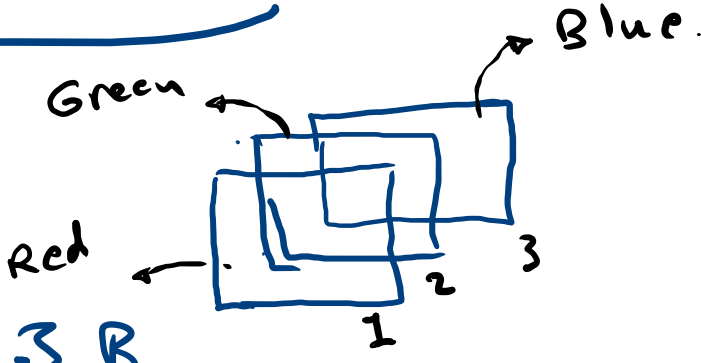
Num. intensity: 256



RGB

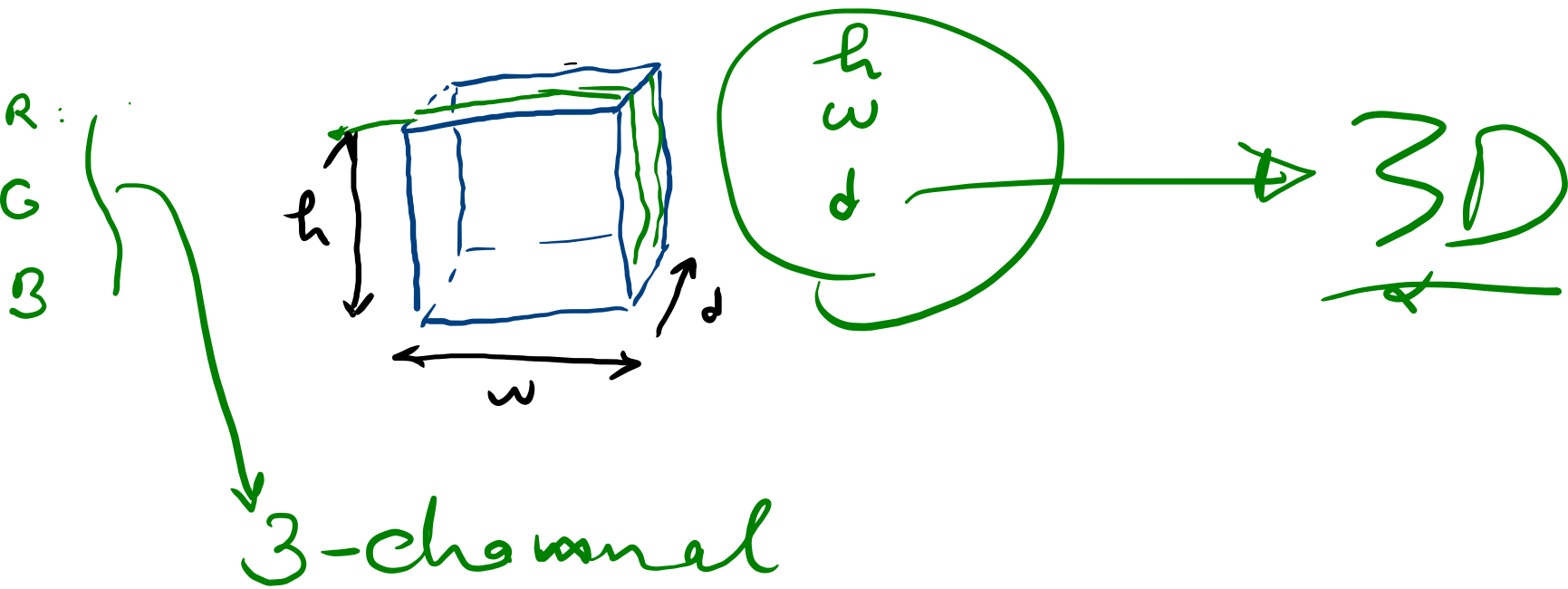
Red, Green, blue

3. Color Image →



→ color : 2R + 1G + 3B

3. Color Image



٭ میزان اطلاعات درون PX ← bit

همه میزان اطلاعات مفید درون تصویر بیشتر [illegible]

کارهای استخراج ویژگی (FE) استخراج!

Bit depth

Max of inten + 1

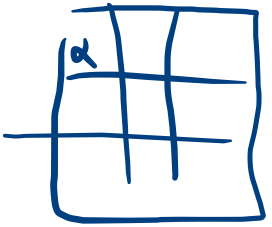
2^{bd} = Num. of intensity

256

Binary → 0 or 1 → $2^{bd} = 2$ → bd = 1 bit

مقدار اطلاعاتی که در یک پیکسل باینری ذخیره می‌شود!

256



Gray Scale Image.

$2^{bd} = 256$

bd = 8 bit

8-bit

R : 256 → 8-bit

G : 256 → 8-bit

B : 256 → 8-bit

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24 bit

Color Image

8 bit

3 Ch

Binary Img : Noi : 2 (0,1)

Gray Img : Noi : 256 [0,255]

Color Img : Noi : 256 X 256 X 256 =
R G B

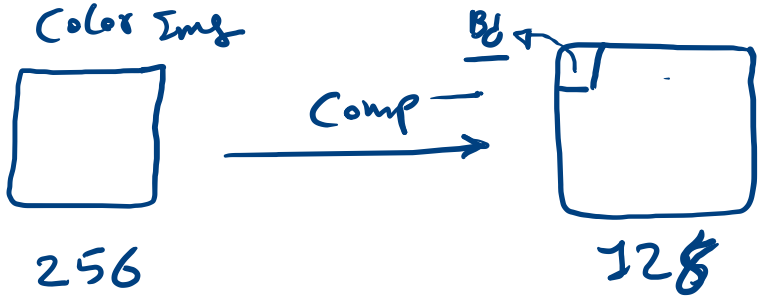
↳ 8bit / sum : 24bit ≈ 16 mil

اگر تصویر رنگی 16-bit

R: 2^{16} intensity

G: 2^{16} intensity $\longrightarrow$ $2^{16} \times 2^{16} \times 2^{16}$ $\rightarrow$ Noi

B: 2^{16} intensity



$2^{bd} = 256 \rightarrow bd : \frac{8\ bit}{\alpha}$

$\frac{2 \times 2 \times 2 \times 2 \times 2 \times 2}{4} \quad \frac{}{4}$ before compress. —

after compression : $2^{bd} = 128 \rightarrow bd = 7\ bit$

bd : 1 bit

c : 2

binary

3x24 bit

24 bit, 16 — c

8 bit

256c

bd : 4

c, 16


The End