

An Image on a hard drive / RAM

$$\begin{bmatrix} g & b & r & a \\ 0 & 1 & 1 & 1 \end{bmatrix}$$

...

$$\begin{bmatrix} 0 & 0 & 1 & 0 & 3 & 0 \end{bmatrix}$$

$$\begin{bmatrix} w & 0 & 0 & 1 \end{bmatrix}$$

Stored a row at a time

Inner loop loops in x

...

...

...

RGB to Grayscale

R, G, B each have 8 bits

8 bits $= 0-255$

Grayscale is also $0-255$

- As a result, we need to

Find a function $g, s.t.$

$g(r, g, b) \rightarrow [0, 255]$

- This is known as a projection,

i.e. the range has more dimensions than the domain.

Option 1:
 $g(r, g, b) \rightarrow 0$

Option 2:
 $g(r, g, b) \rightarrow \frac{r+g+b}{3}$