

#LifeKoKaroLift

CNN (Theory + Coding)

Course: SQL
Lecture On: CNN
Instructor: Shivam Garg



Today's Agenda

- 1 What is CNN? ✓
- 2 What is convolution? ✓
- 3 Applications
- 4 Coding

End to End

Convolutional Neural Network

?

Multiclass Classification

→ CNN :-

Pixel			
120	240	0	170
90	10	45	95
90	80	15	120
241	25	120	110
91	73	63	78

} 5×4

pixel image

(Grid → topology).

pixel values → 0 to 255 { → scale it

Black White

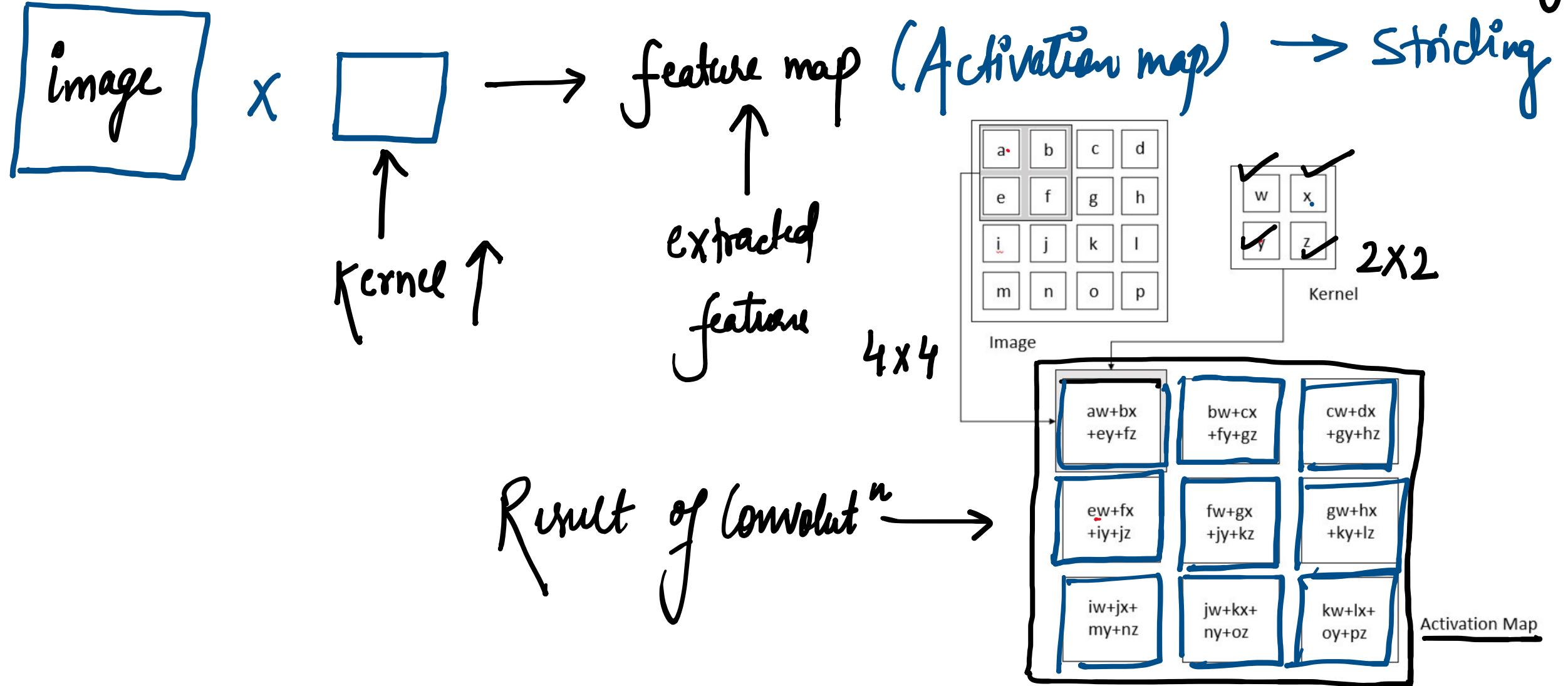
image → array → CNN → o/p

5×4

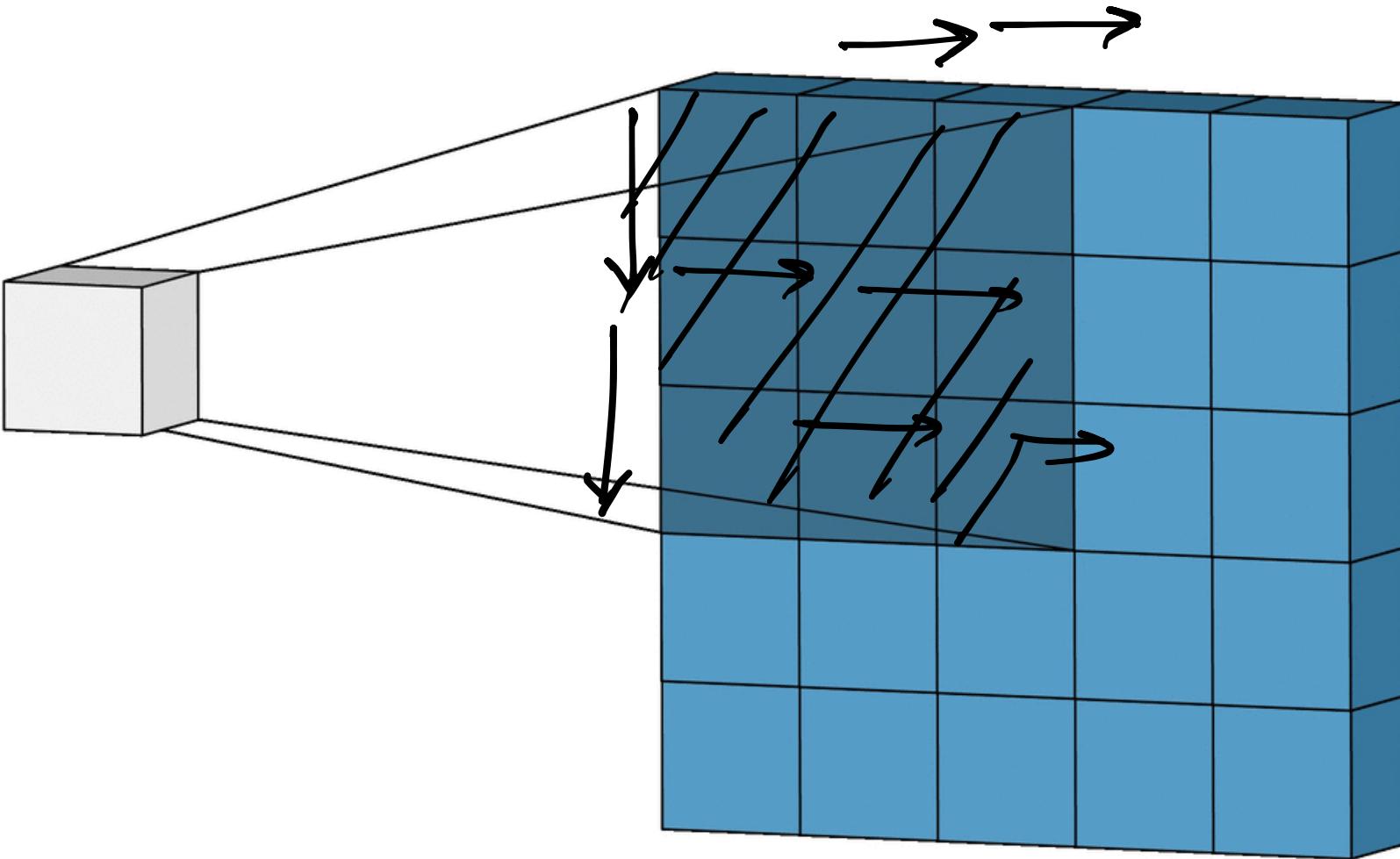
$> 0 \& < 255$

grayish

→ Convolution :- (Kind of multiplication) (To extract the features from the image)

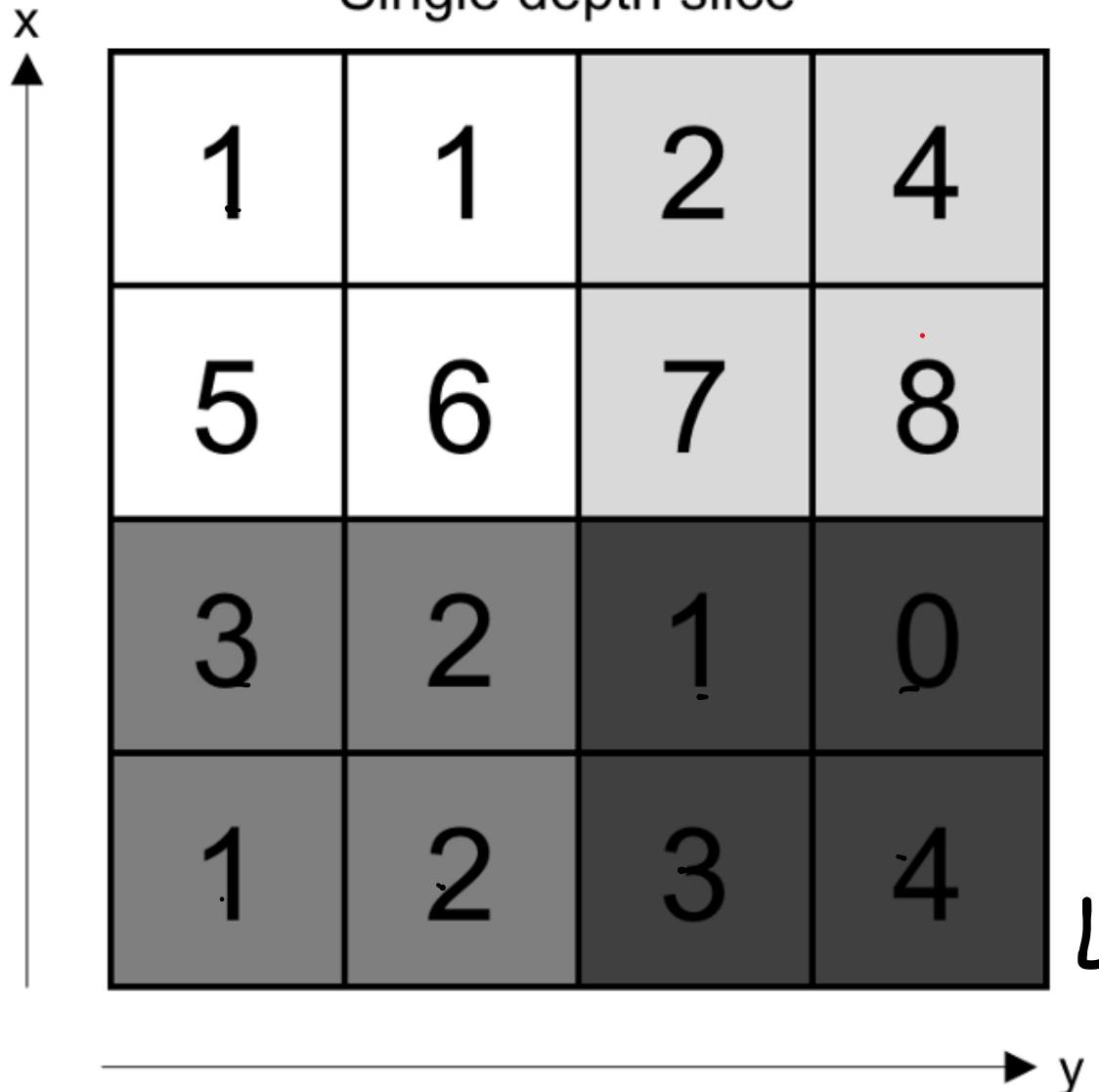


feature
map



max pooling layer (Reduce dimension)

Single depth slice



2x2

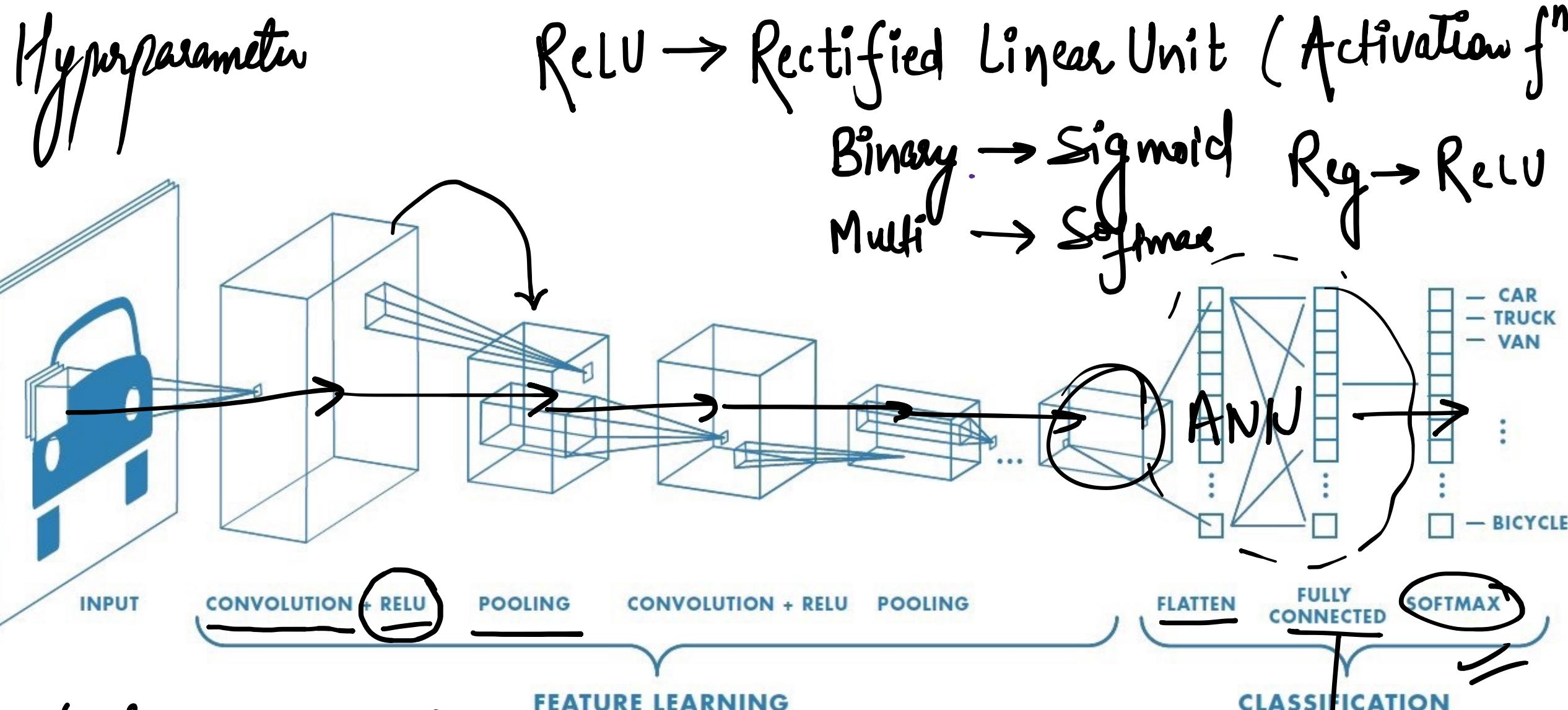
No Learning

Max pool with 2x2 filters and stride 2

4x4

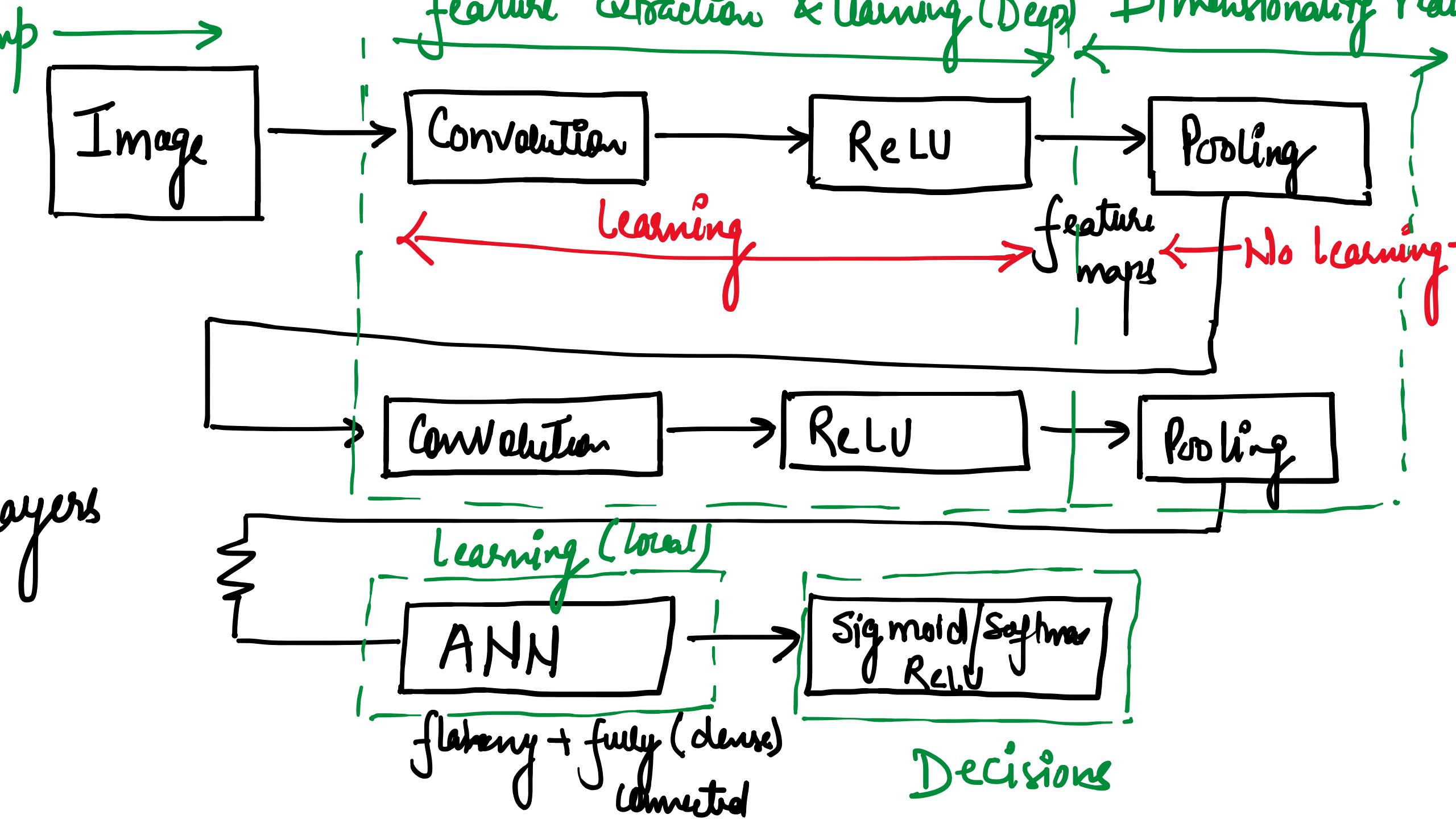


2x2



B/w image → 1^o image

Coloured image → 3^o images (R G B image) → original image



→ Hyperparameters :- Complexity Task ↑ → No. of layers ↑

- i) No. of layers (Convolution + Pooling) } CNN
- ii) Kernel size
- iii) Activation fn (ReLU is mostly used) } ANN
- iv) Epochs (No. of iterations)
- v) Batch size

→ Industrial applications of CNN:-

- * Image Classification
- * Medical imaging (Cancer detection)
- * Facial recognition
- * Autonomous Driving (Driverless Car)
- * Gesture Recognition
- * Object Detection
- * Image Segmentation
- * Text classification
- * Biometric Authentication

