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PRO Professional Academy

Digital Talent Scholarship 2022

Machine Learning

Lead a sprint through the Associate Cloud Engineer Track

Agenda

- What is Convolution Neural Network ?
- How CNN Works ?
- What is Convolutions and pooling ?
- How to handle complex images ?

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Are your students ML-ready?

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Recap

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What Is Convolutional Neural Network

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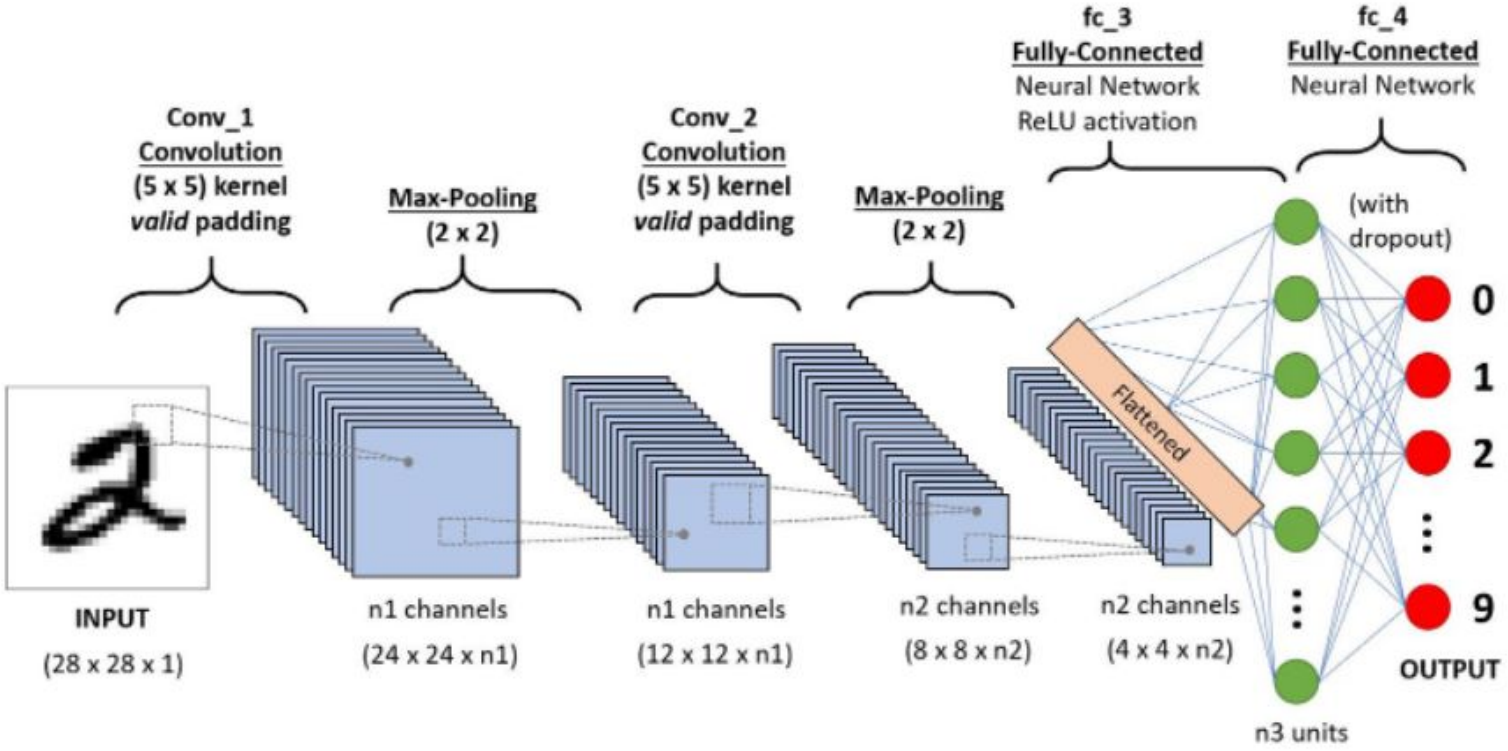
CNN atau bisa disebut sebagai Convolution Neural Network merupakan bagian dari AI.

CNN merupakan bagian dari Deep Learning


Conv_1
Convolution
(5 x 5) kernel
valid padding
Max-Pooling
(2 x 2)
Conv_2
Convolution
(5 x 5) kernel
valid padding
Max-Pooling
(2 x 2)
fc_3
Fully-Connected
Neural Network
ReLU activation
fc_4
Fully-Connected
Neural Network
(with dropout)
Flattened
INPUT
(28 x 28 x 1)
n1 channels
(24 x 24 x n1)
n1 channels
(12 x 12 x n1)
n2 channels
(8 x 8 x n2)
n2 channels
(4 x 4 x n2)
n3 units
0
1
2
9
OUTPUT

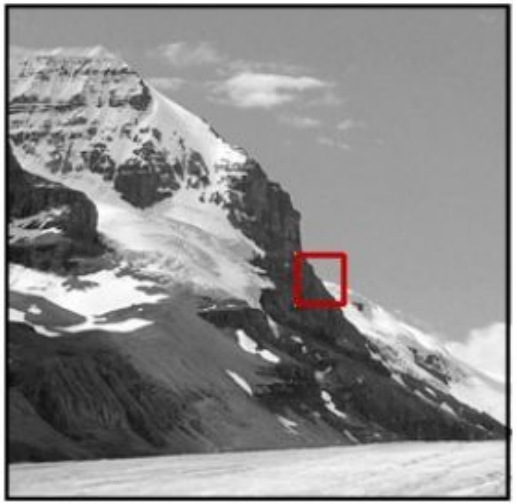
Convolutions is about Filter !

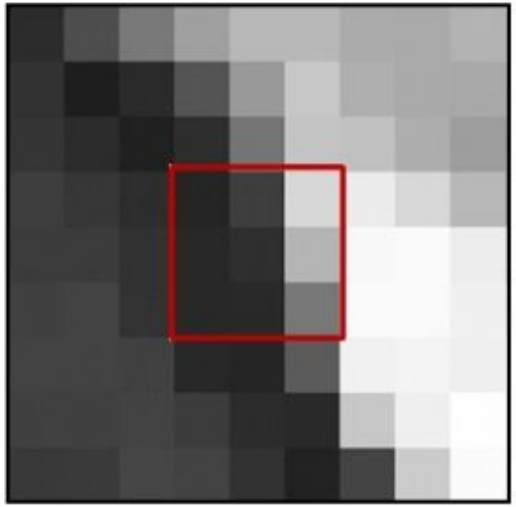
Input image

1	1	1	0	0
0	1	1	1	0
0	0	1	1	1
0	0	1	1	0
0	1	1	0	0

Filter

1	0	1
0	1	0
1	0	1





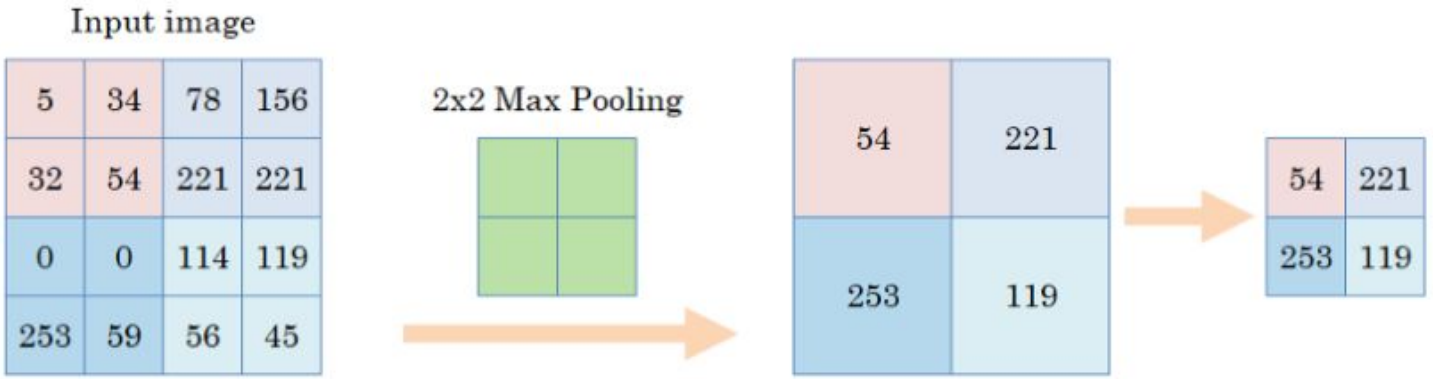
43	102	169
35	58	191
38	44	155

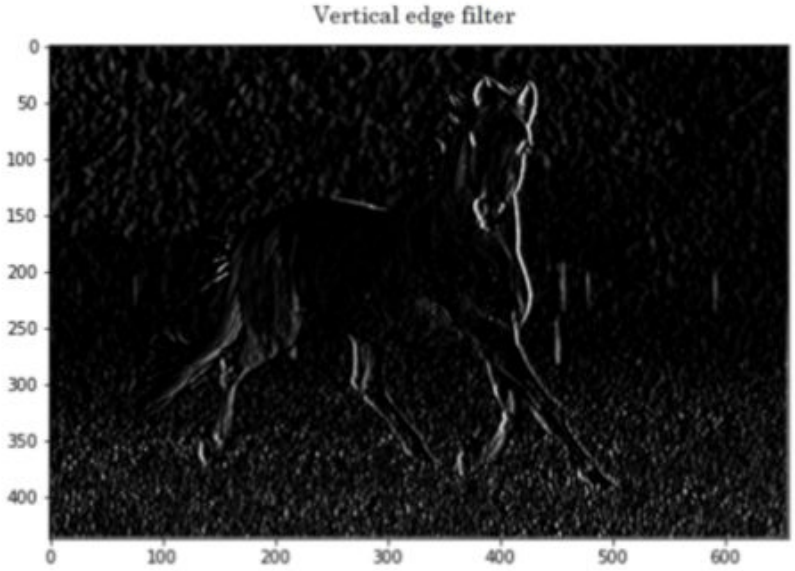
Source

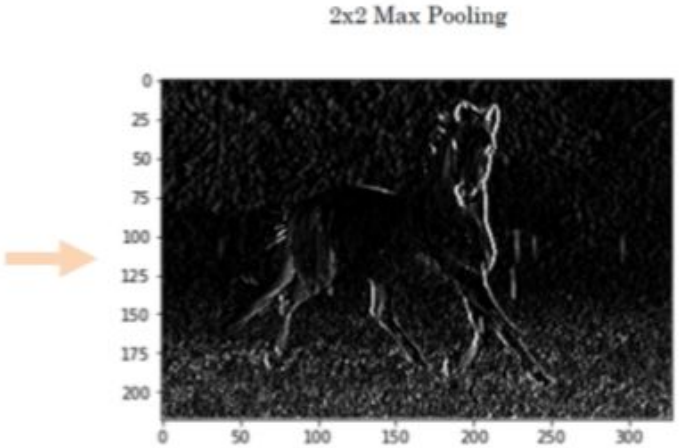
1x1	1x0	1x1	0	0
0x0	1x1	1x0	1	0
0x1	0x0	1x1	1	1
0	0	1	1	0
0	1	1	0	0

4		

Lalu Apa itu Pooling ?




Vertical edge filter
0
50
100
150
200
250
300
350
400
0
100
200
300
400
500
600


2x2 Max Pooling
0
25
50
75
100
125
150
175
200
0
50
100
150
200
250
300

https://www.youtube.com/watch?v=QzY57FaENXg

[(1) Simple explanation of convolutional neural network | Deep Learning Tutorial 23 (Tensorflow & Python) - YouTube]

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[(1) Image classification using CNN (CIFAR10 dataset) | Deep Learning Tutorial 24 (Tensorflow & Python) - YouTube]

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Dataset :
https://www.kaggle.com/datasets/drgfreeman/rockpaperscissors

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Thank you