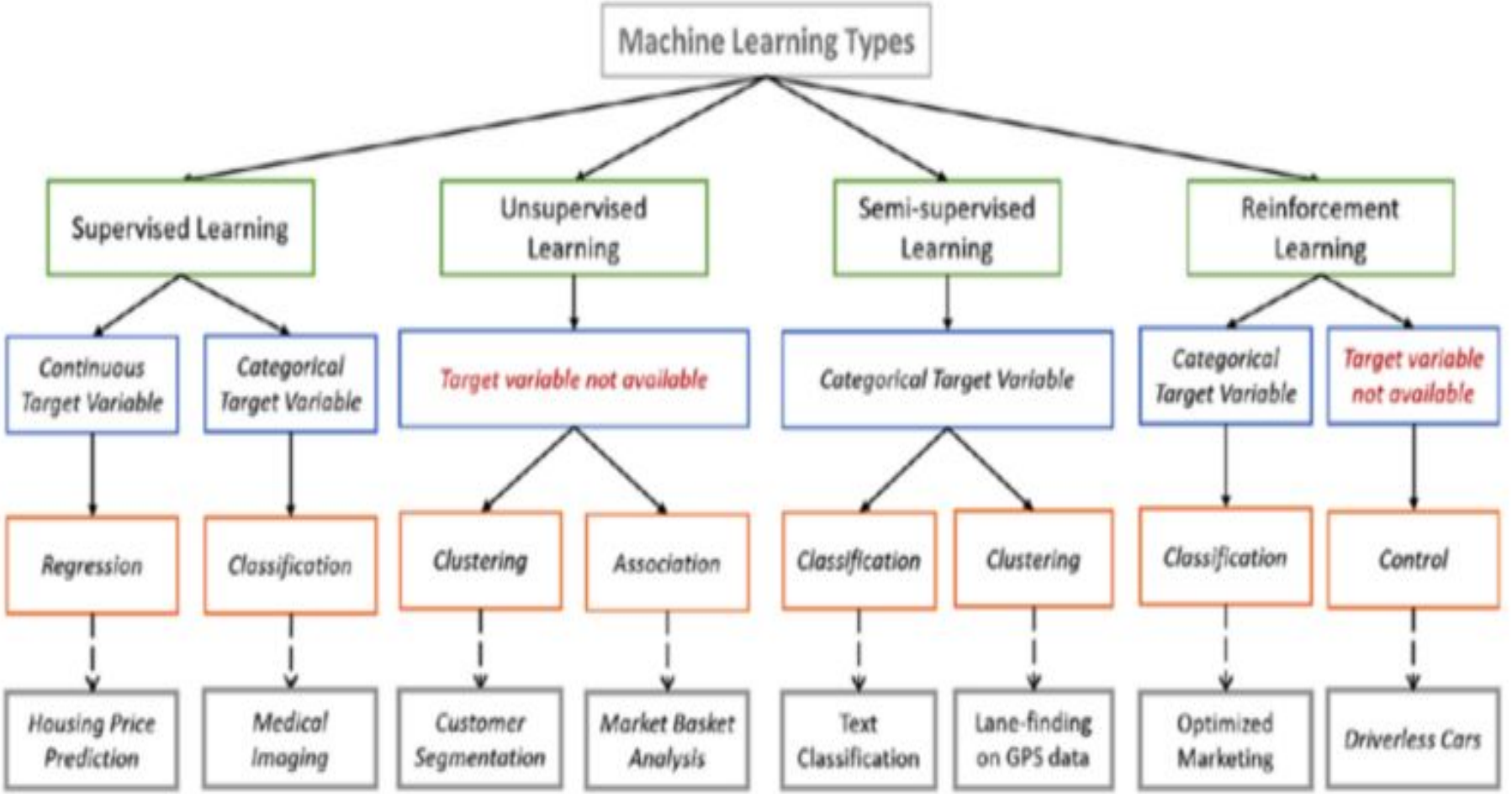
Machine Learning & Deep Learning

Types of Machine Learning

Machine Learning

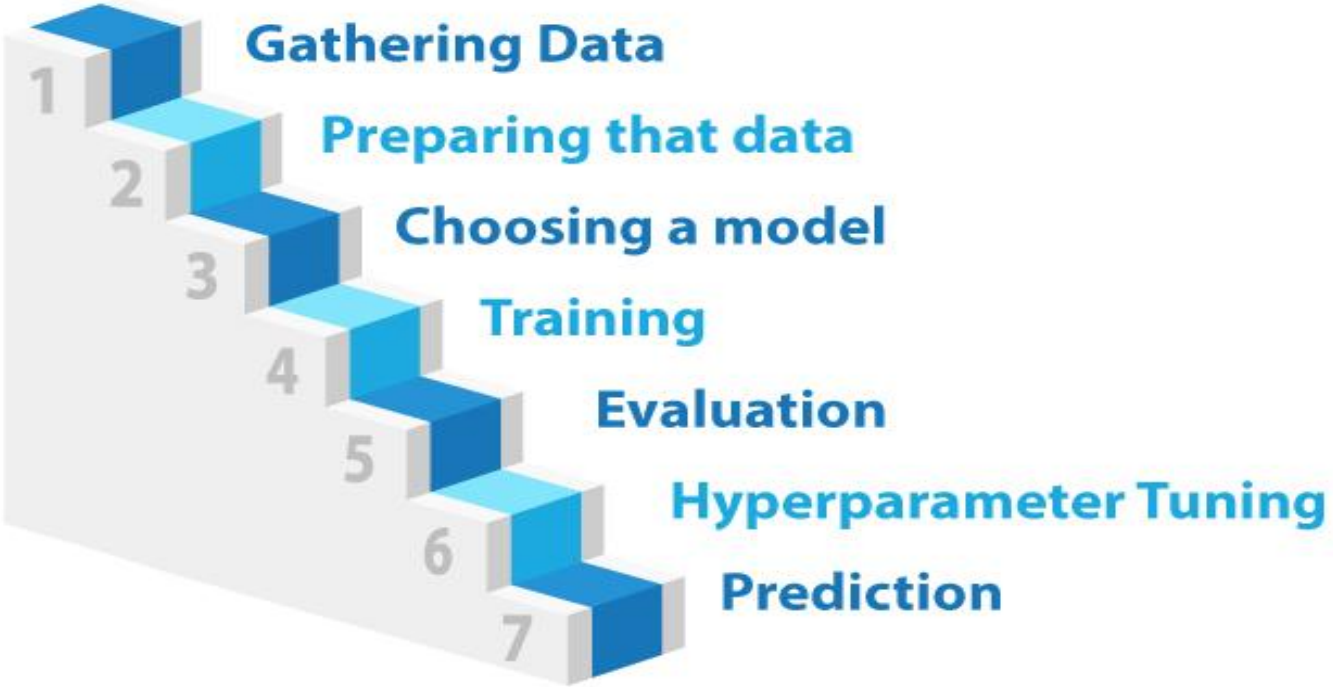
- **Supervised**
  - Task Driven (Predict next value)
  -
- **Unsupervised**
  - Data Driven (Identify Clusters)
  -
- **Reinforcement**
  - Learn from Mistakes
  -

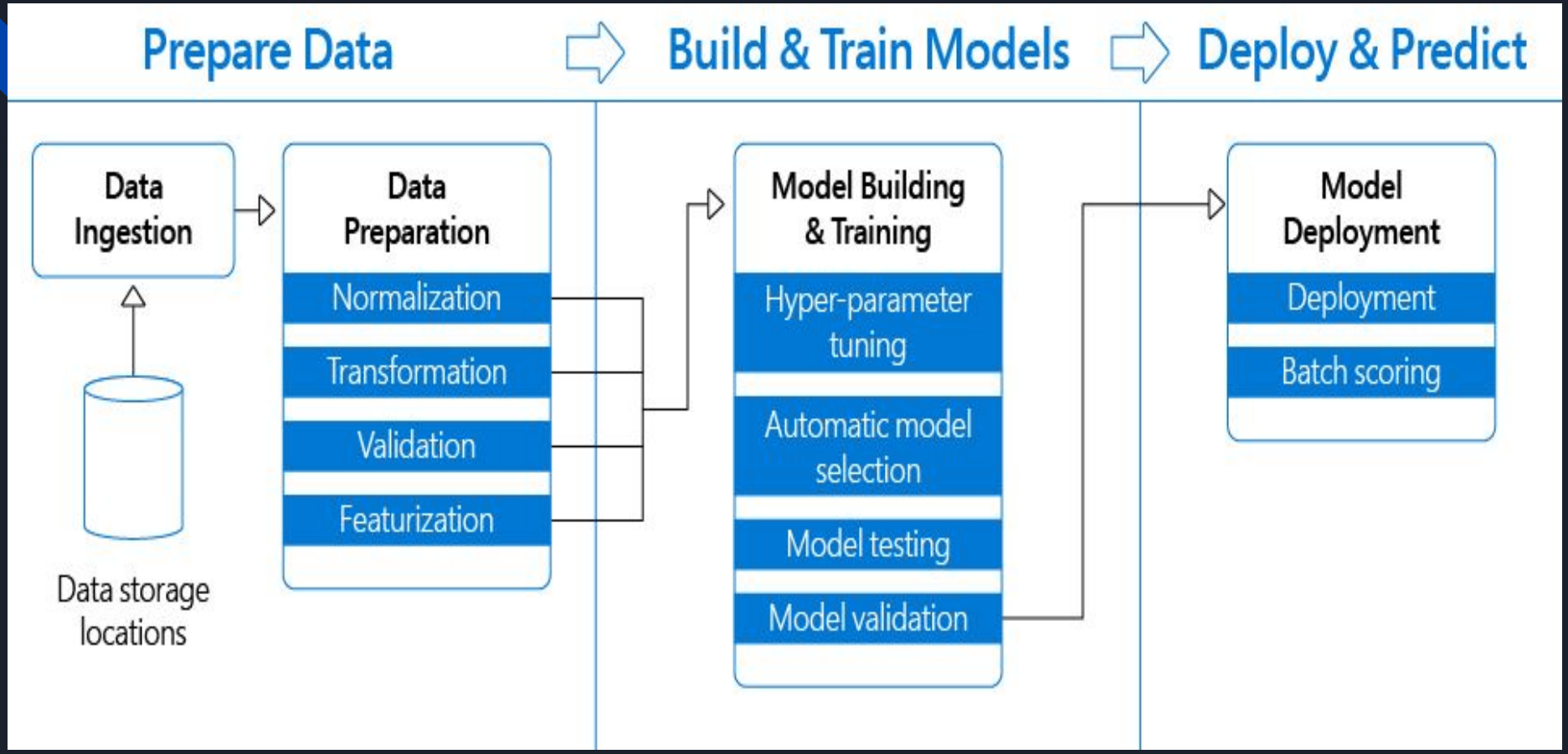

Machine Learning Types
Supervised Learning
Unsupervised Learning
Semi-supervised Learning
Reinforcement Learning
Continuous Target Variable
Categorical Target Variable
Target variable not available
Categorical Target Variable
Categorical Target Variable
Target variable not available
Regression
Classification
Clustering
Association
Classification
Clustering
Classification
Control
Housing Price Prediction
Medical Imaging
Customer Segmentation
Market Basket Analysis
Text Classification
Lane-finding on GPS data
Optimized Marketing
Driverless Cars

List of Common Machine Learning Algorithms

https://www.analyticsvidhya.com/blog/2017/09/common-machine-learning-algorithms/

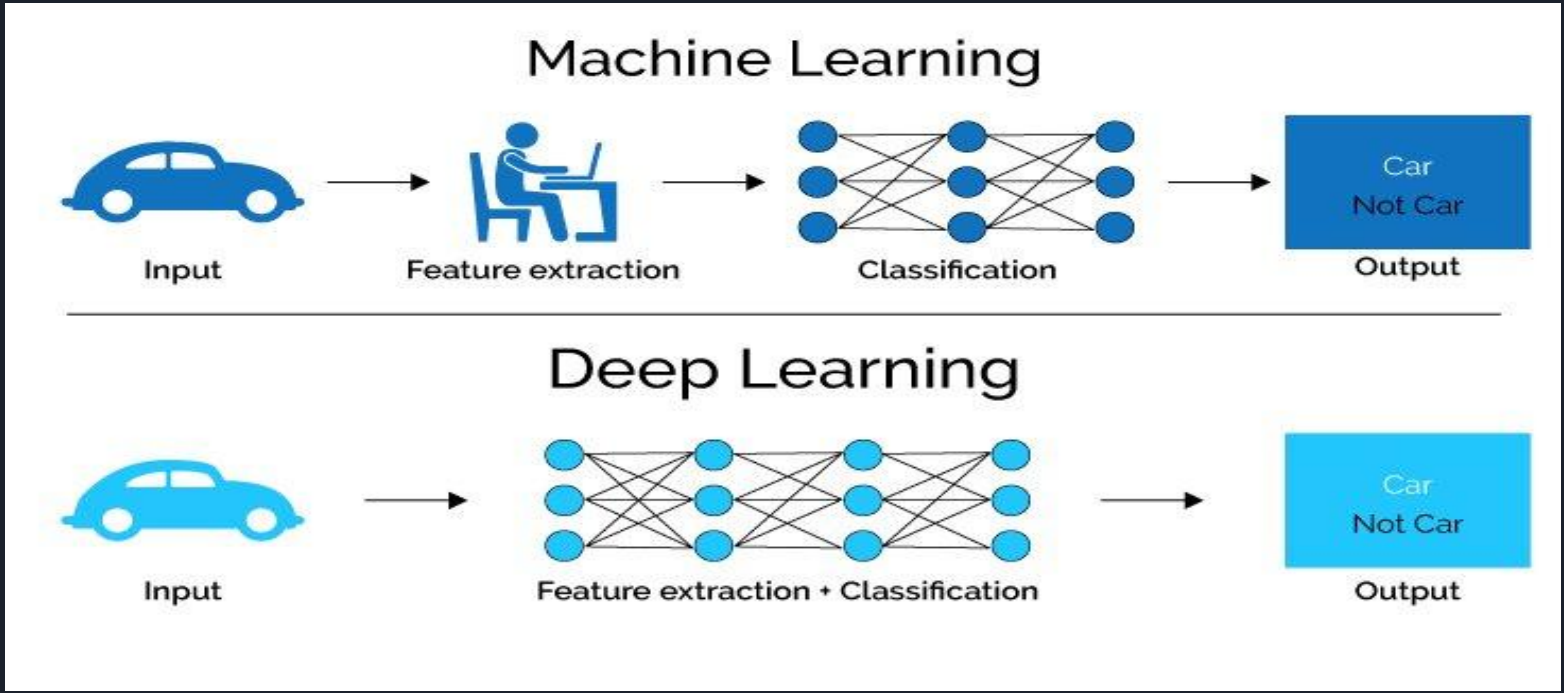
7 steps of Machine Learning



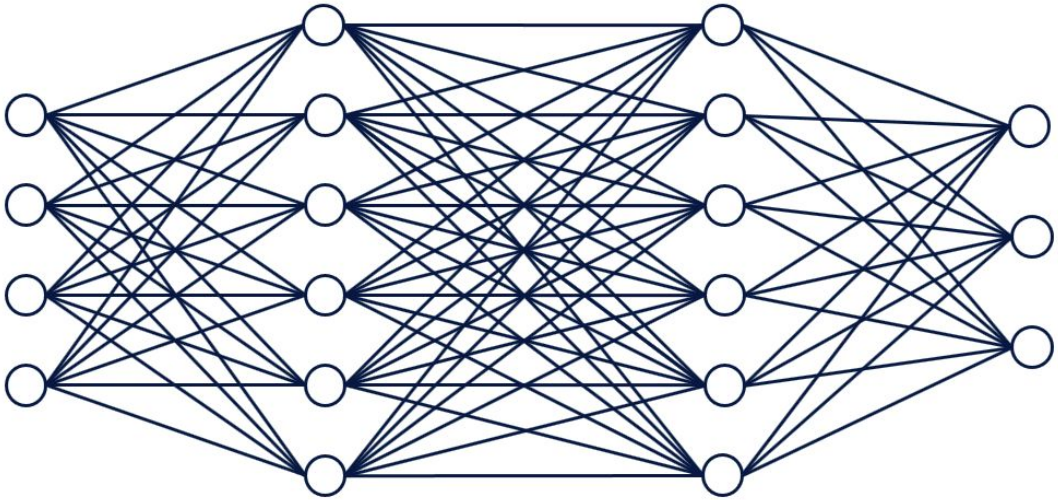

Prepare Data
Build & Train Models
Deploy & Predict
Data Ingestion
Data storage locations
Data Preparation
Normalization
Transformation
Validation
Featurization
Model Building & Training
Hyper-parameter tuning
Automatic model selection
Model testing
Model validation
Model Deployment
Deployment
Batch scoring

Neural Networks

Machine Learning Vs Deep Learning



Neural Networks - Classification



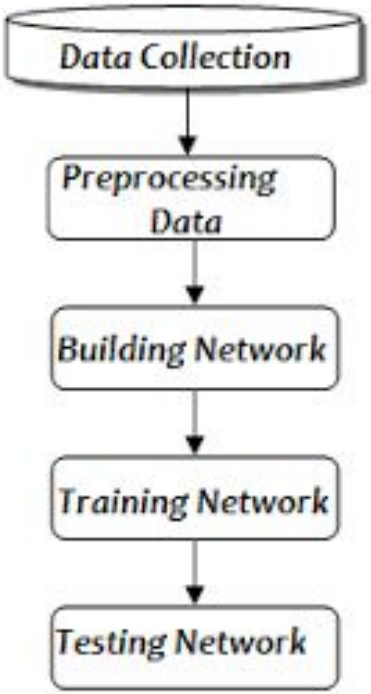
Introduction to Neural Networks - DL

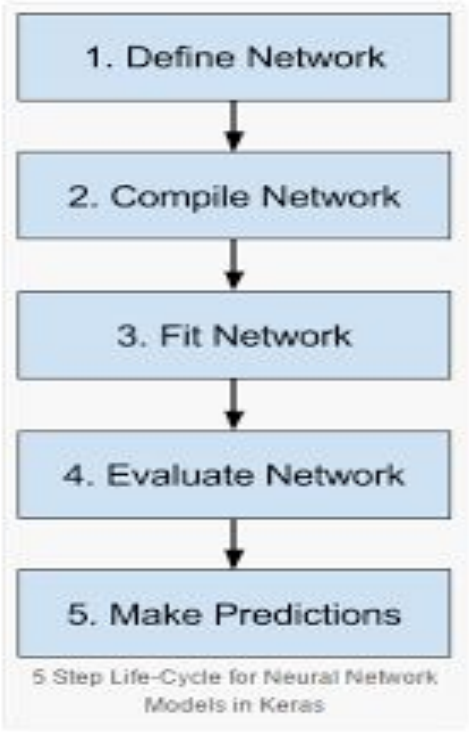
https://docs.google.com/presentation/d/1D7GjBXlTnMfkZ48k_kO-oj-s5CBIE7DrcNb-WgBzp5o/edit?usp=sharing

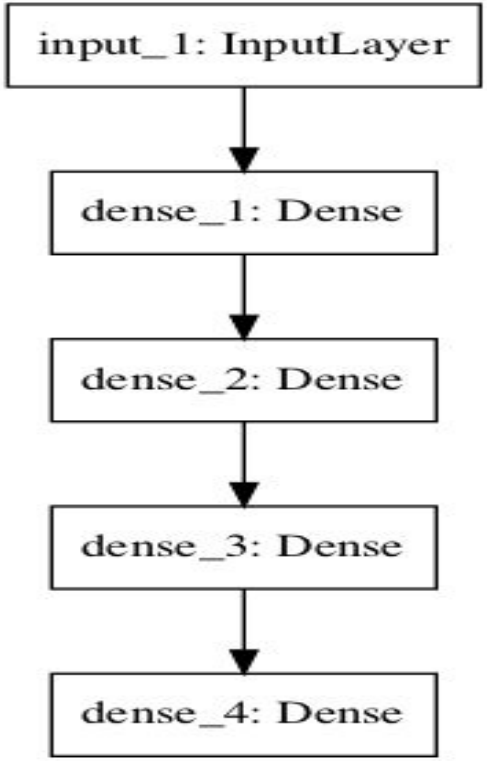
TensorFlow Basics

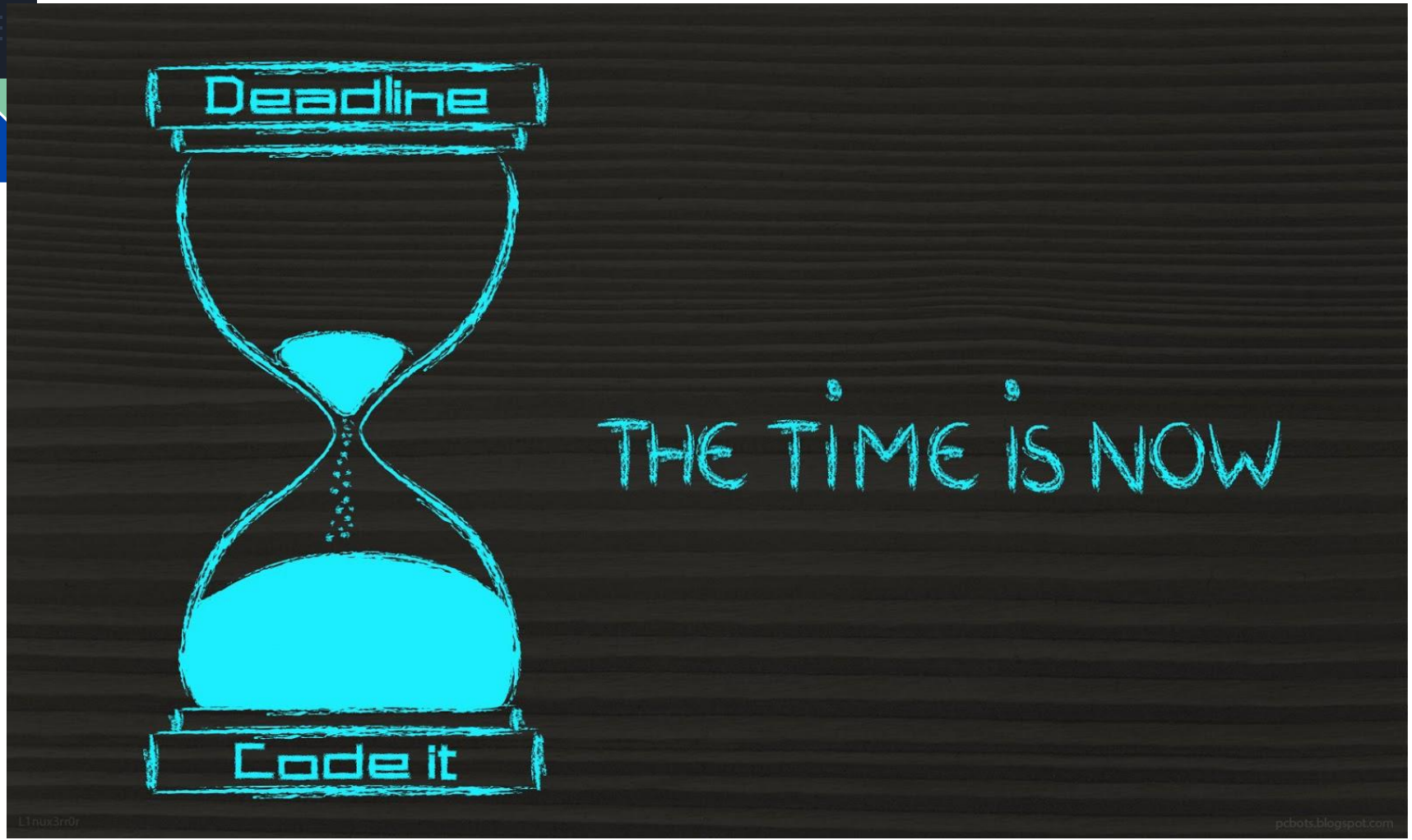
https://docs.google.com/presentation/d/13zp765wZxVurqNnO12oPCAhTEGZ5ZlX6sL6yFqm80Bk/edit?usp=sharing

Basic Flow Design vs Model Cycle vs Model








Deadline
Code it
THE TIME IS NOW
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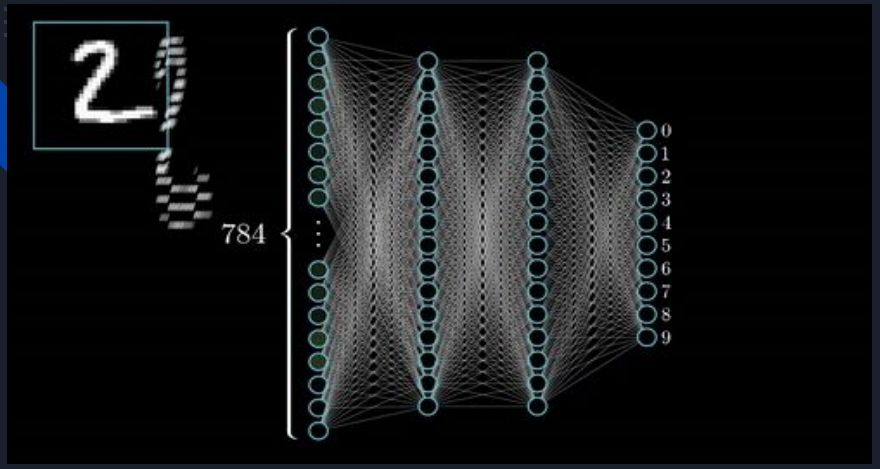
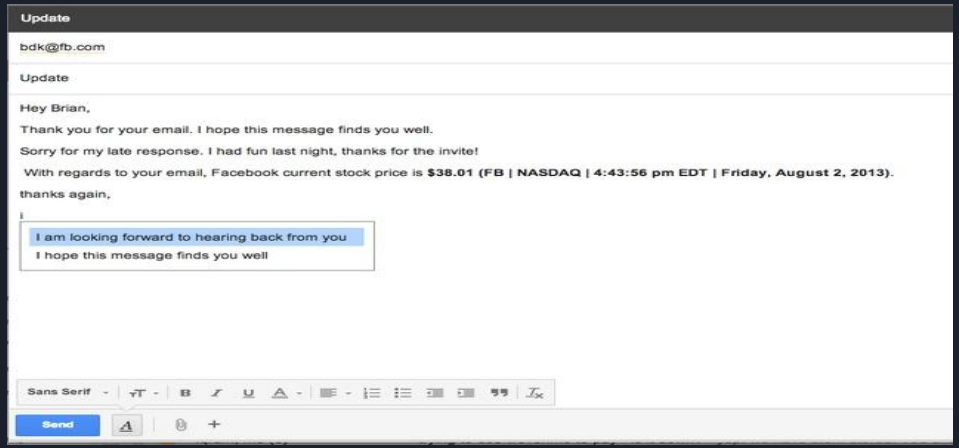
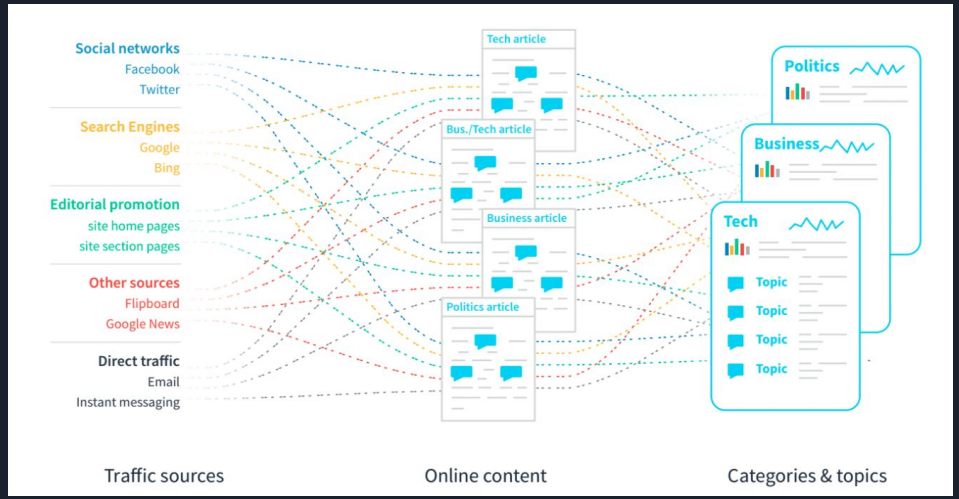
pcbots.blogspot.com

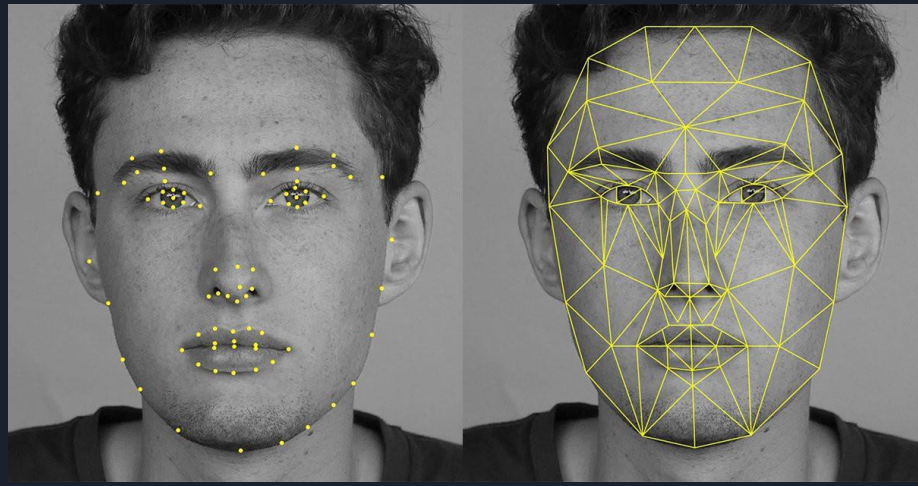
Deep Learning Techniques

- Multilayer Perceptron Networks.
- Convolutional Neural Networks
- Long Short-Term Memory Recurrent Neural Networks.
- Recurrent Neural Network (RNN)
- Generative Adversarial Network (GAN)
- Boltzmann Machine

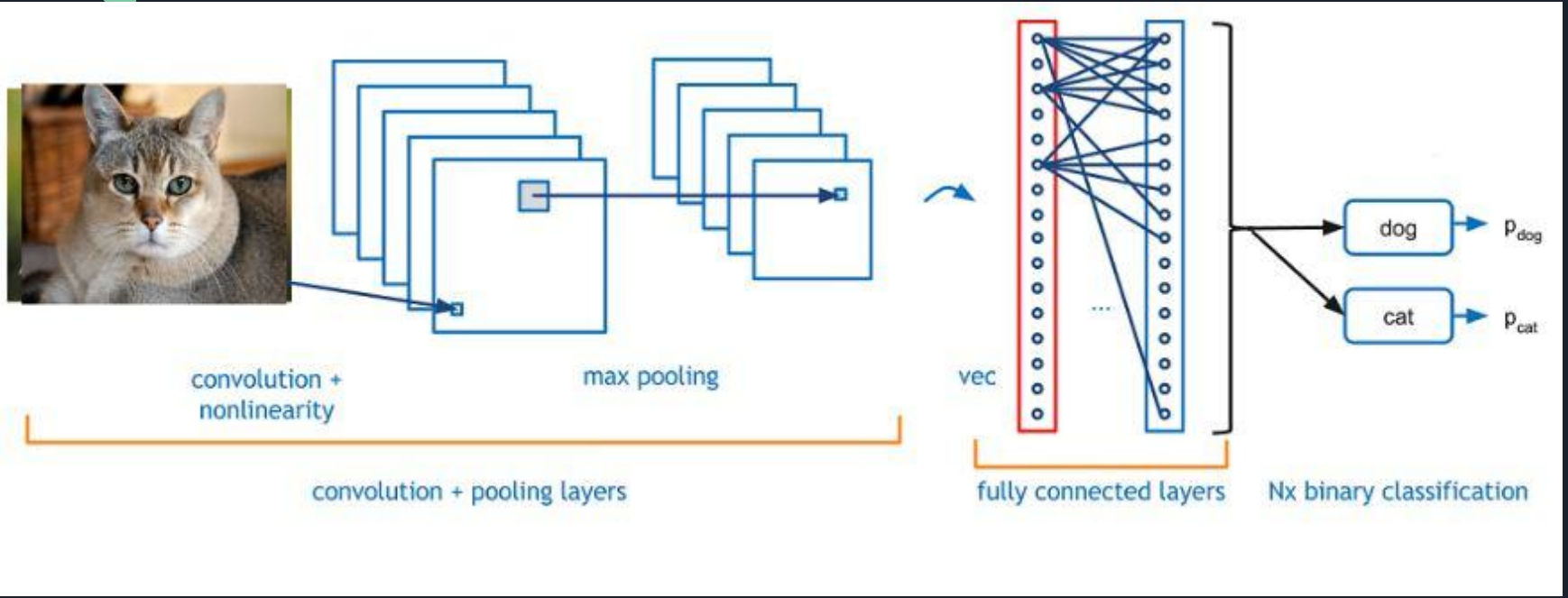

784
0
1
2
3
4
5
6
7
8
9


Update
bdk@fb.com
Update
Hey Brian,
Thank you for your email. I hope this message finds you well.
Sorry for my late response. I had fun last night, thanks for the invite!
With regards to your email, Facebook current stock price is $38.01 (FB | NASDAQ | 4:43:56 pm EDT | Friday, August 2, 2013).
thanks again,
I am looking forward to hearing back from you
I hope this message finds you well
Sans Serif
Send


Social networks
Facebook
Twitter
Search Engines
Google
Bing
Editorial promotion
site home pages
site section pages
Other sources
Flipboard
Google News
Direct traffic
Email
Instant messaging
Tech article
Bus./Tech article
Business article
Politics article
Politics
Business
Tech
Topic
Topic
Topic
Topic
Traffic sources
Online content
Categories & topics

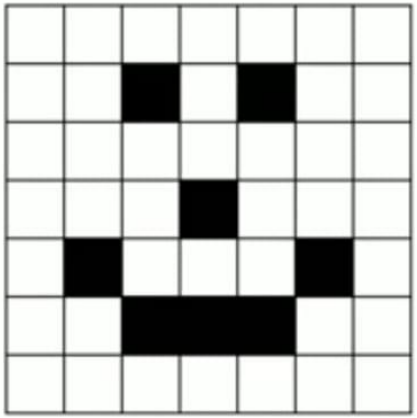


Cat vs Dog using Convolutional Neural Network



Convolutional Neural Network Picture to Matrix

Convolutional Neural Networks



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

Deep Learning A-Z

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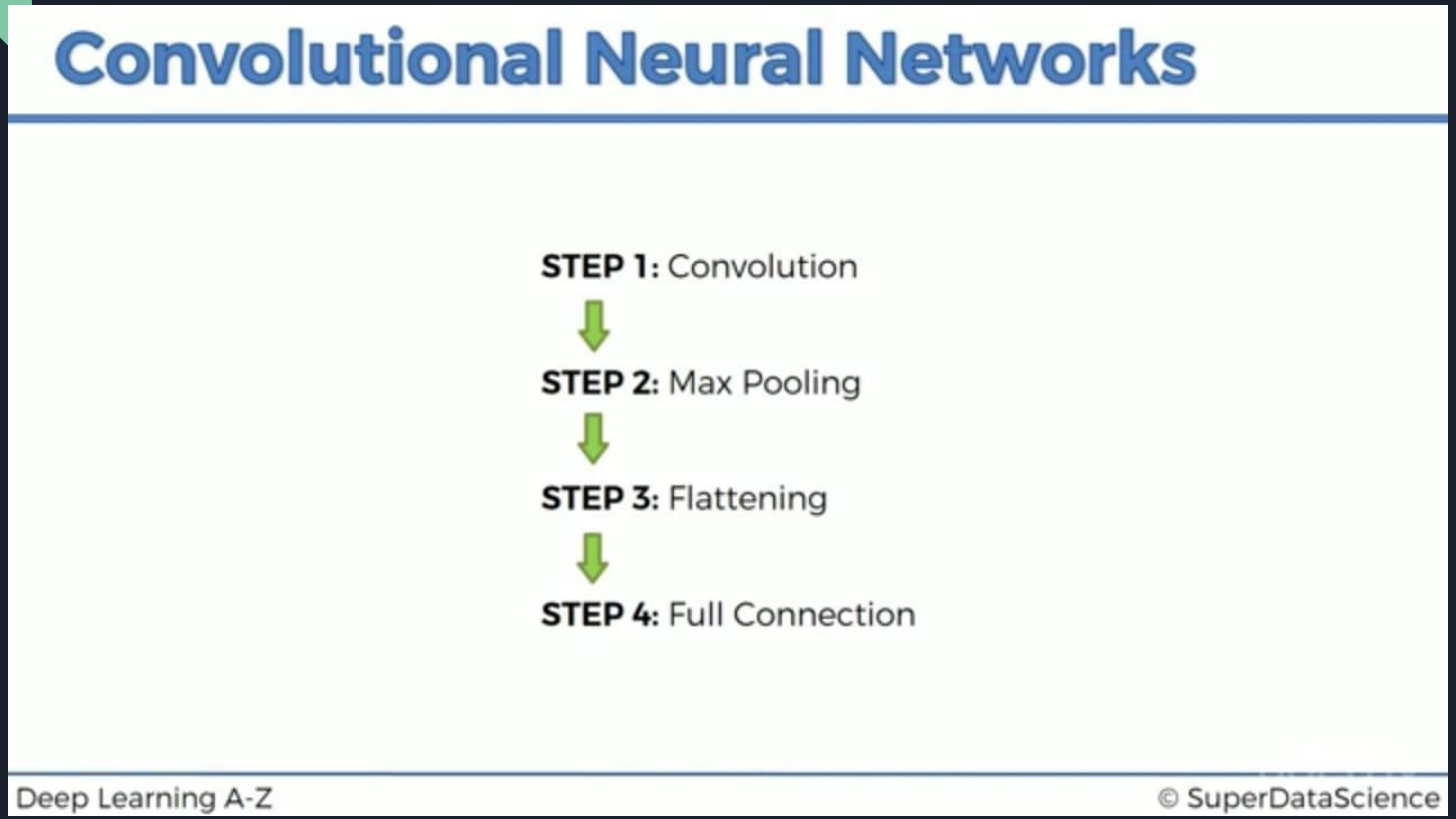
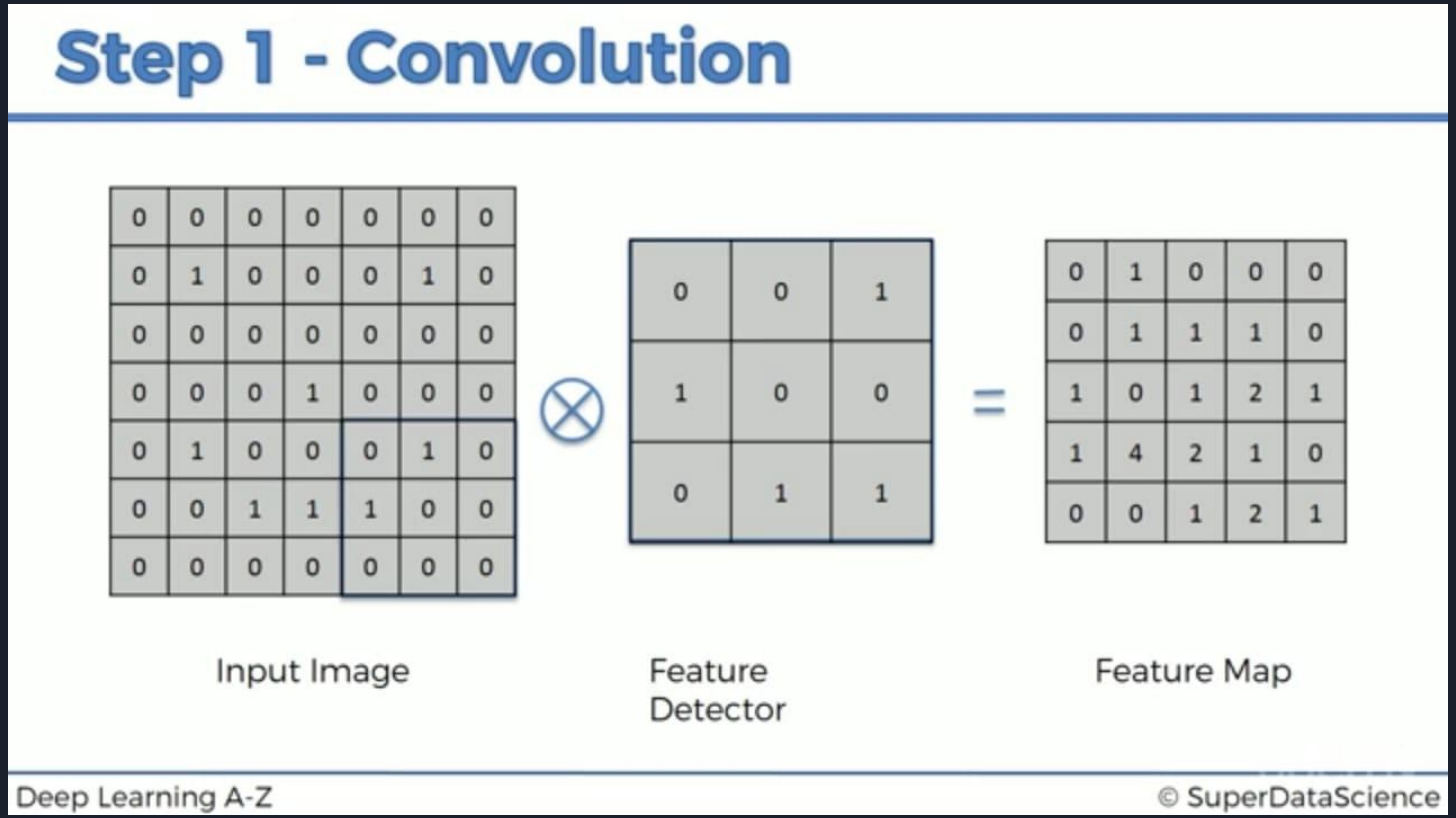
Steps for Convolutional Neural Network



STEP 1


Step 1 - Convolution
0 0 0 0 0 0 0
0 1 0 0 0 1 0
0 0 0 0 0 0 0
0 0 0 1 0 0 0
0 1 0 0 0 1 0
0 0 1 1 1 0 0
0 0 0 0 0 0 0
0 0 1
1 0 0
0 1 1
0 1 0 0 0
0 1 1 1 0
1 0 1 2 1
1 4 2 1 0
0 0 1 2 1
Input Image
Feature Detector
Feature Map
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STEP 2

Step 2 - Max Pooling

Image Source: Wikipedia

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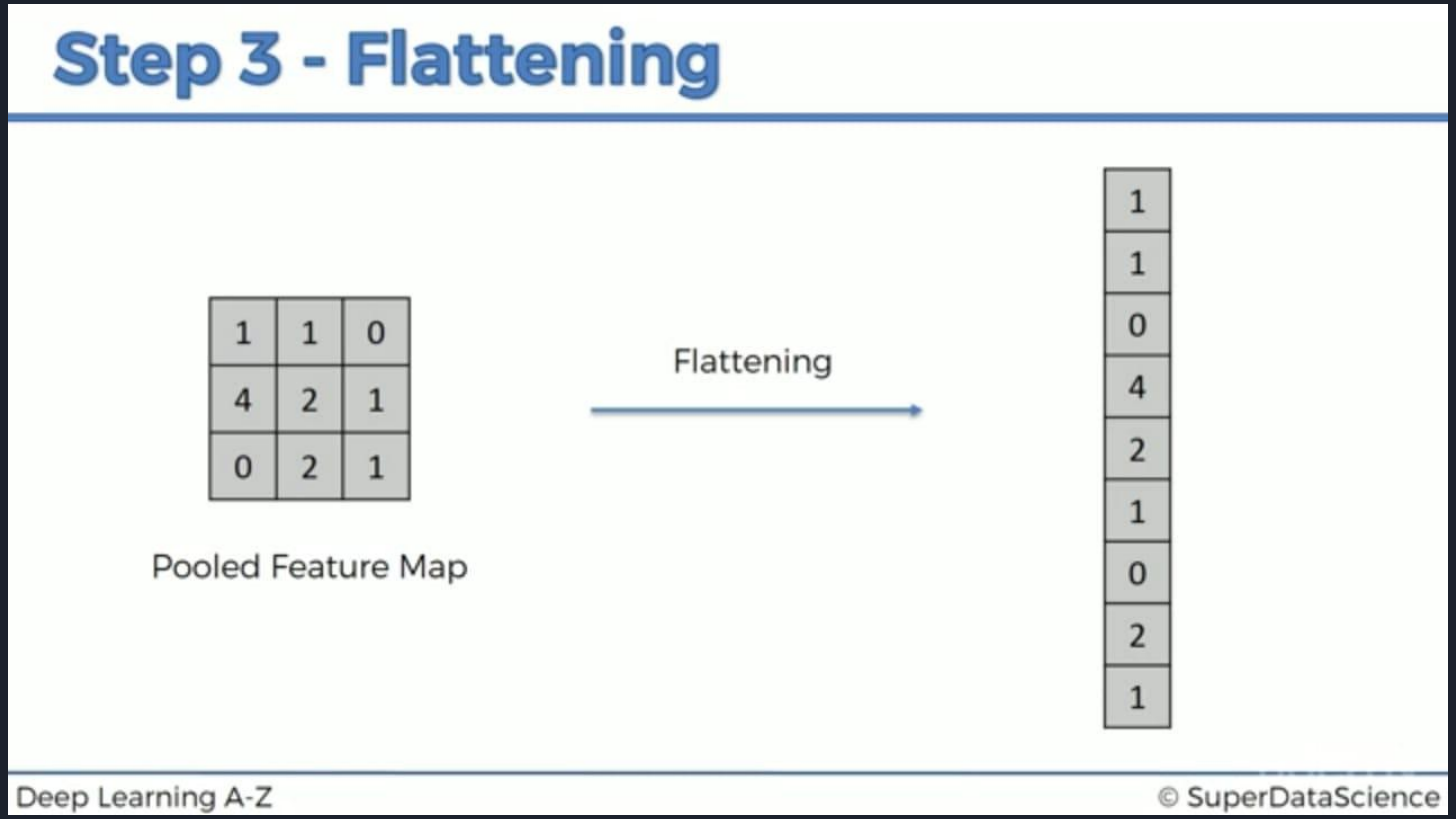
STEP 3


Step 3 - Flattening
1 1 0
4 2 1
0 2 1
Pooled Feature Map
Flattening
1
1
0
4
2
1
0
2
1
Deep Learning A-Z
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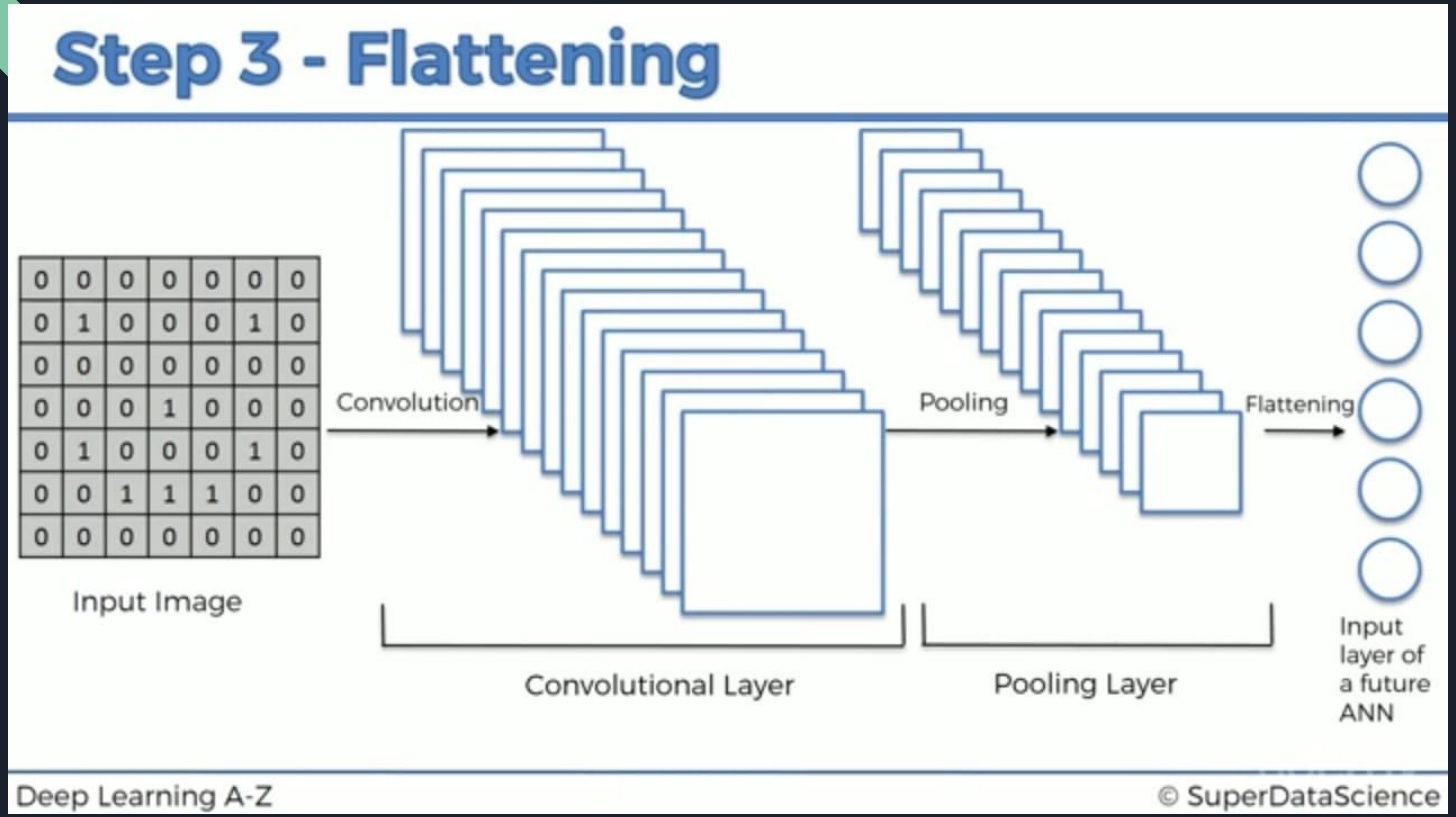
CNN - process


Step 3 - Flattening
0 0 0 0 0 0 0
0 1 0 0 0 1 0
0 0 0 0 0 0 0
0 0 0 1 0 0 0
0 1 0 0 0 1 0
0 0 1 1 1 0 0
0 0 0 0 0 0 0
Input Image
Convolution
Pooling
Flattening
Convolutional Layer
Pooling Layer
Input layer of a future ANN
Deep Learning A-Z
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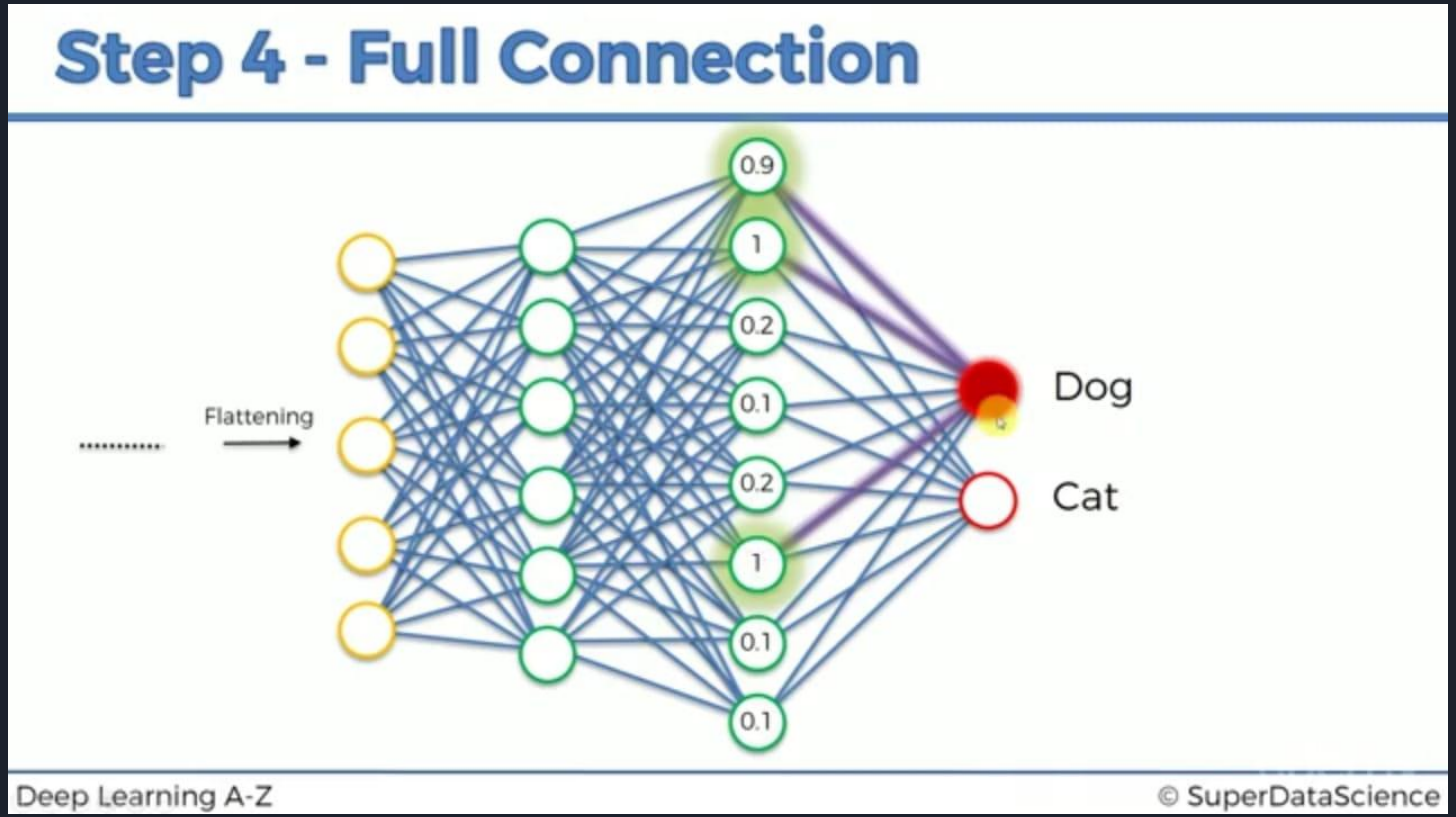
Neural Networks



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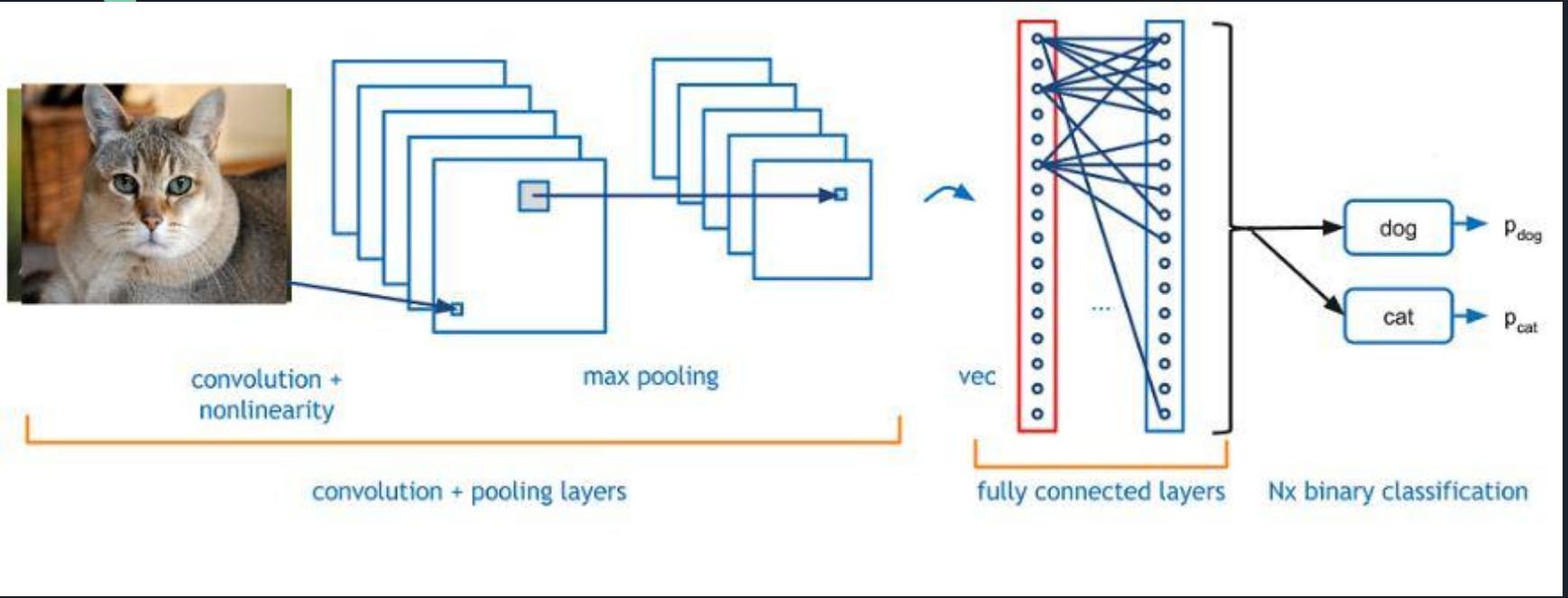

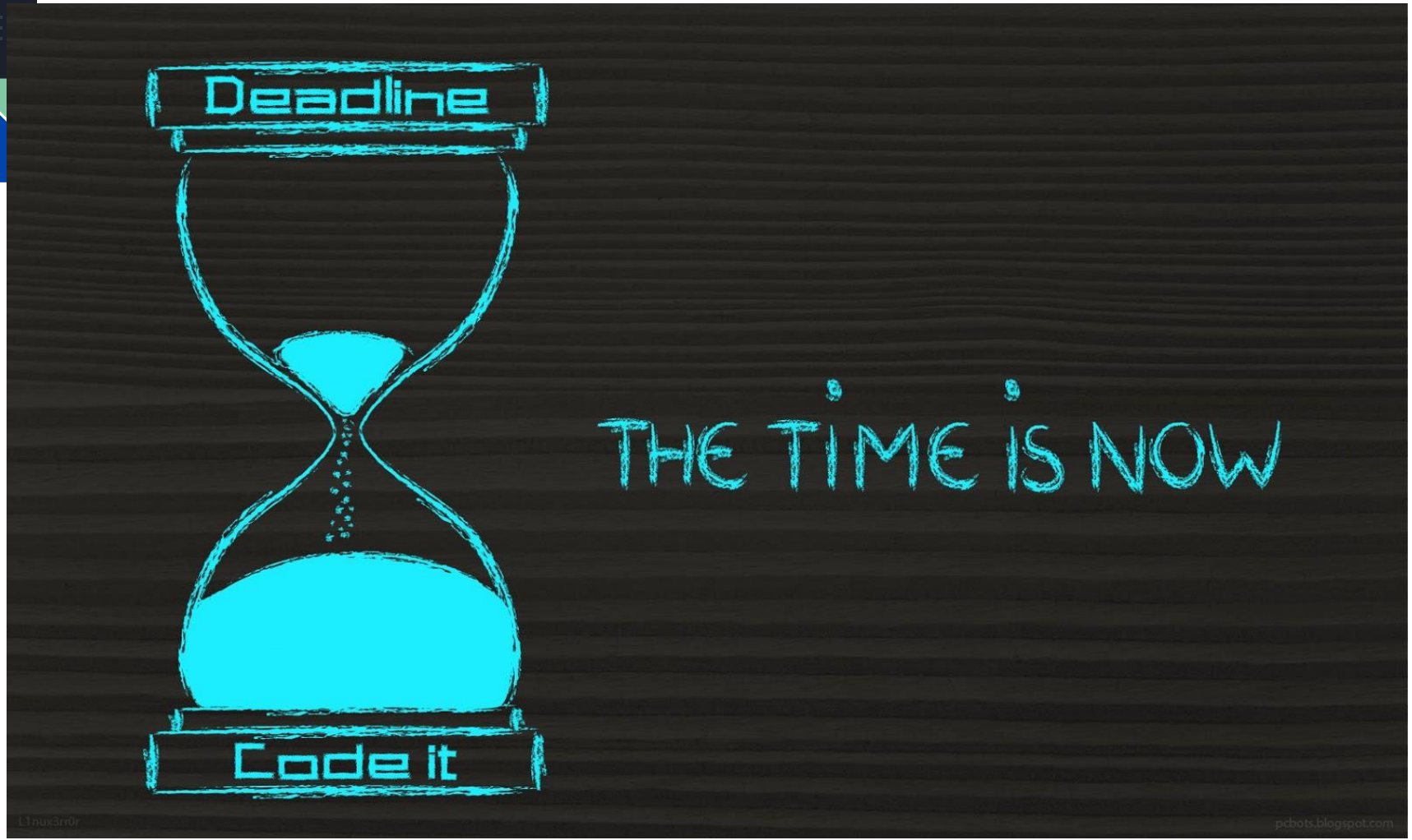
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