

 #mvpconf


Edição 2018



Desvendando o mundo da Deep Learning visão computacional com CNTK

Vitor Meriat

Microsoft Azure



Patrocínio:



Beneficiários do Evento:

**APAE-Associação de Pais e Amigos
dos Excepcionais**

Lar da Criança Ninho de Paz

Para quem quiser doar outros valores além das inscrições:

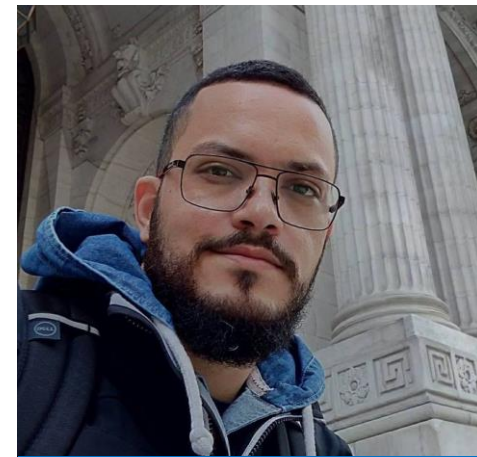
CAIXA ECONÔMICA FEDERAL
AG: 0504
CC: 01823-0
CNPJ: 89.078.059/0001-06

ITAU UNIBANCO AS
Agência: 467
CC: 611109
CNPJ 53.372.454/0001-50

About me

Vitor is a computer scientist who is passionate about creating software that will positively change the world we live in.

Currently, he works as **Technical Evangelist** at **ESX**, where he is helping to shape new disruptive services based in Cloud Computing. Data science enthusiast, he works with Big Data projects, data analytics and **Microsoft MVP Azure**.



Categorias de premiação:
Azure

Primeiro ano premiado:
2016

Número de prêmios MVPs:
2



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twitter.com/vitormeriat



github.com/vitormeriat



youtube.com/vitormeriat

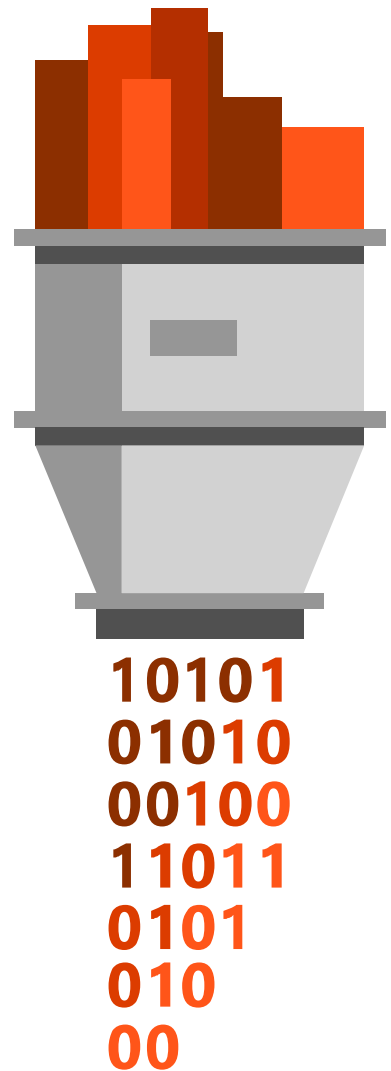
#mvpconf 



Agenda

O que é Visão Computacional e
por que é uma assunto tão difícil;

O que é Deep Learning?

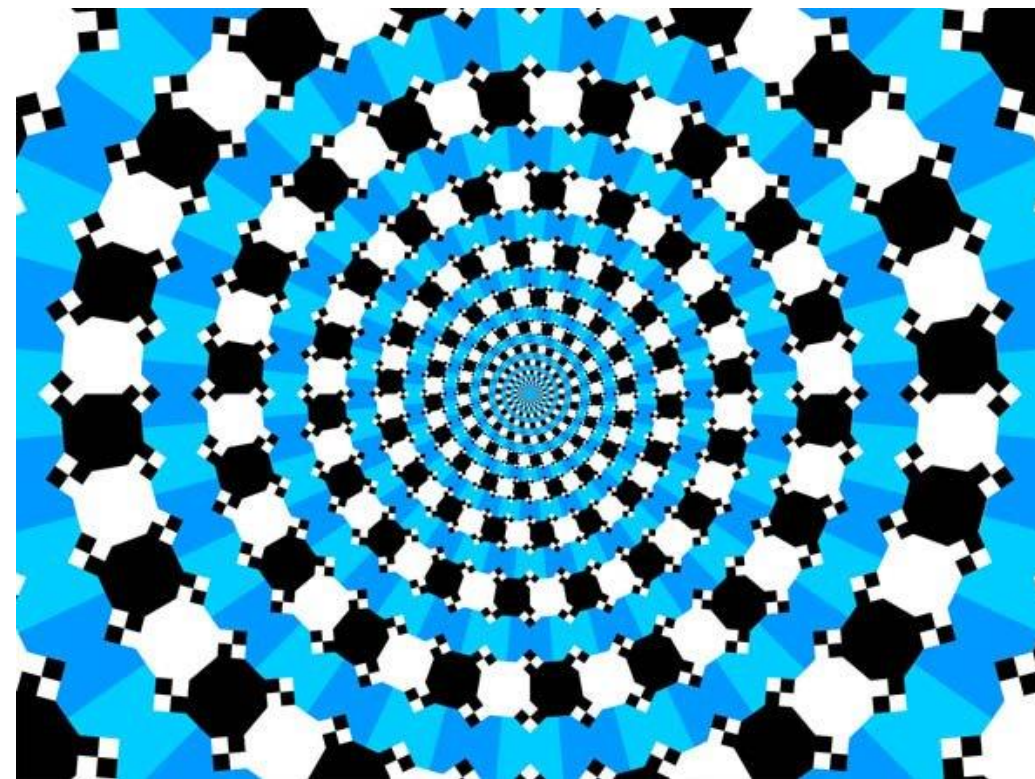


Visão é um problema inverso e mal-posto

- Pequenas variações na imagem levam a interpretações distintas;
- Visão é ambígua
- Ruído piora o problema

Visão é difícil

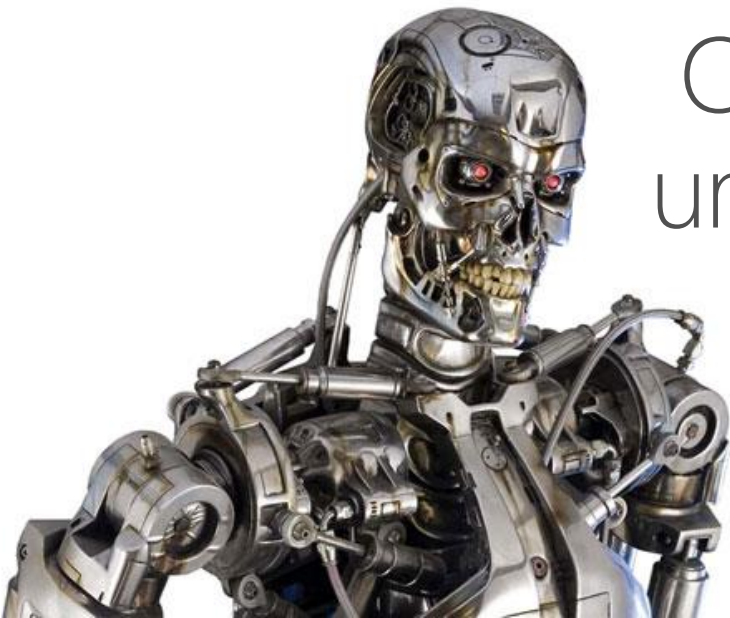
- Ambiguidades
- Distorções
- Paradoxos
- Ficções



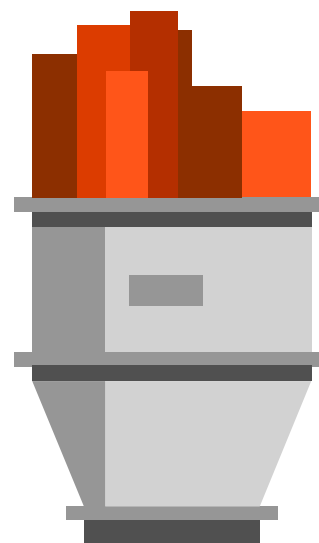
Eu quero ensinar para o meu computador
que isso é um gato

Eu sou
um gato

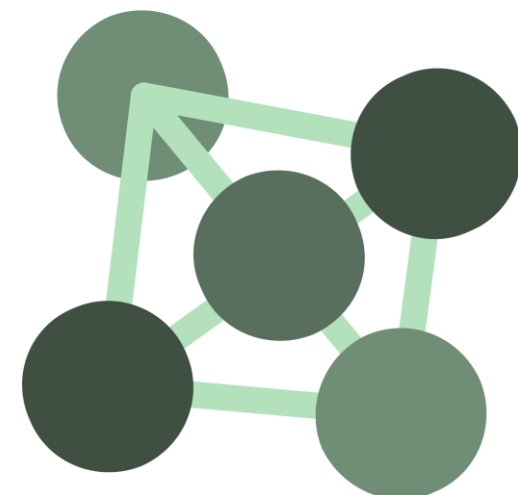
O que é
um gato?



Vamos ensinar esse computador

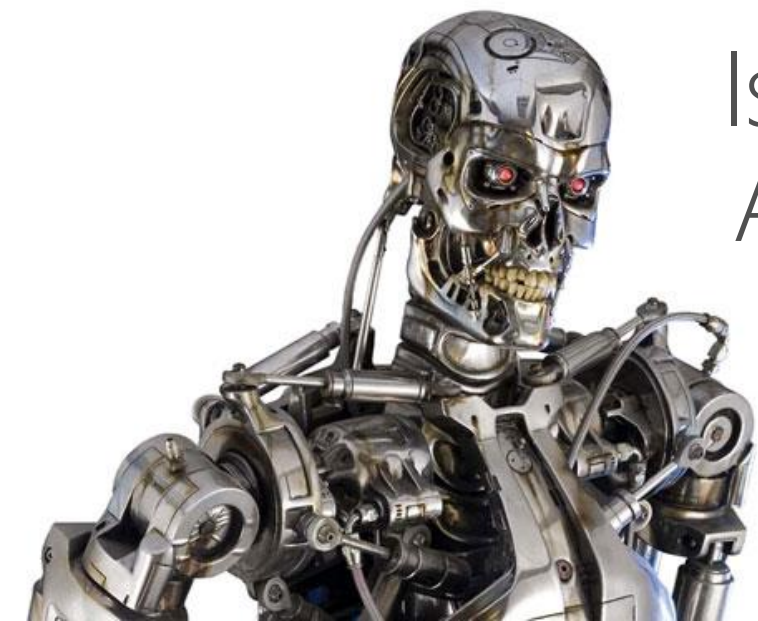


10101
01010
00100
11011
0101
010
00

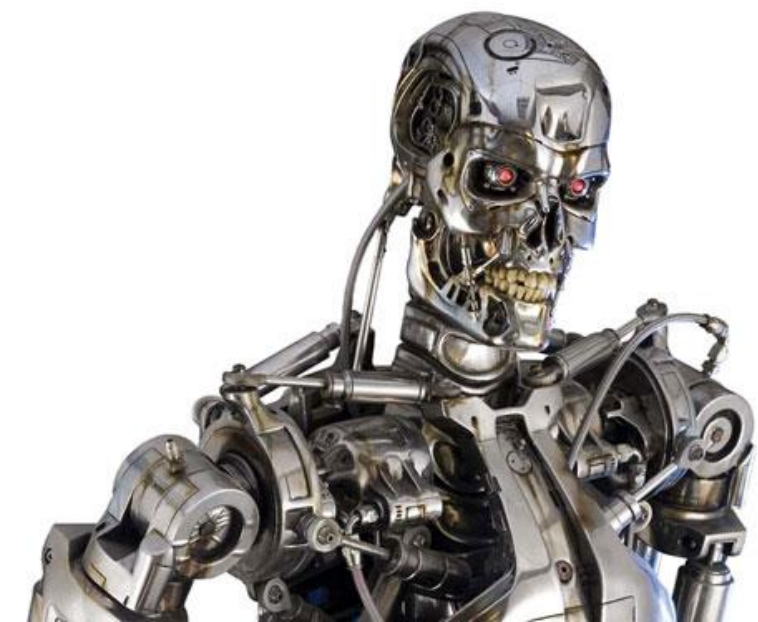




Isso é um gato.
Agora eu já sei.



WTF?!?!



1



3

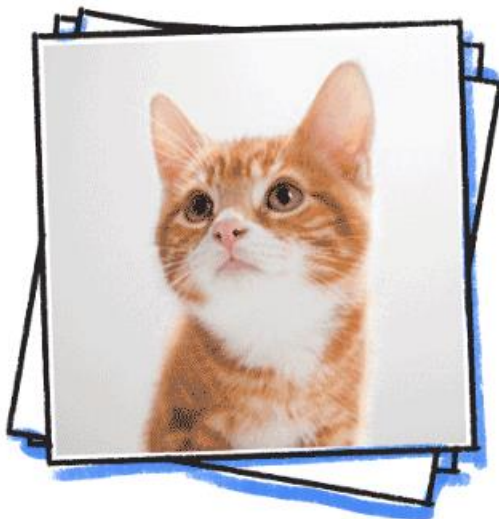


2



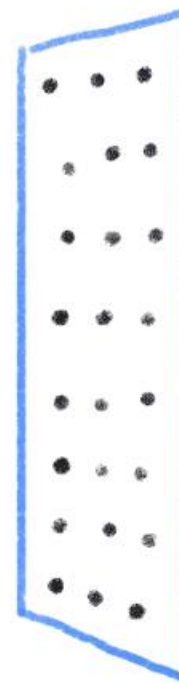
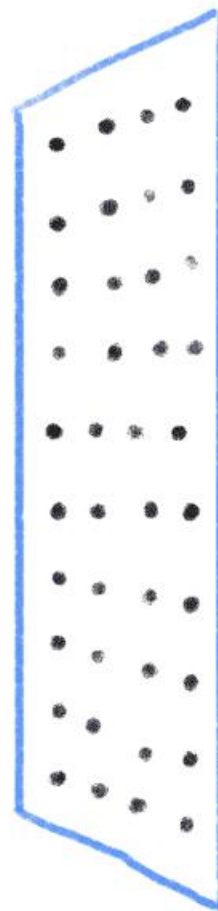
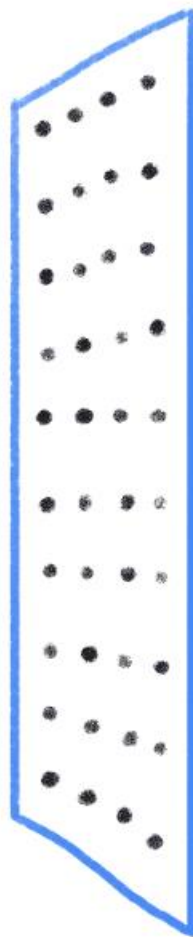
4

CAT

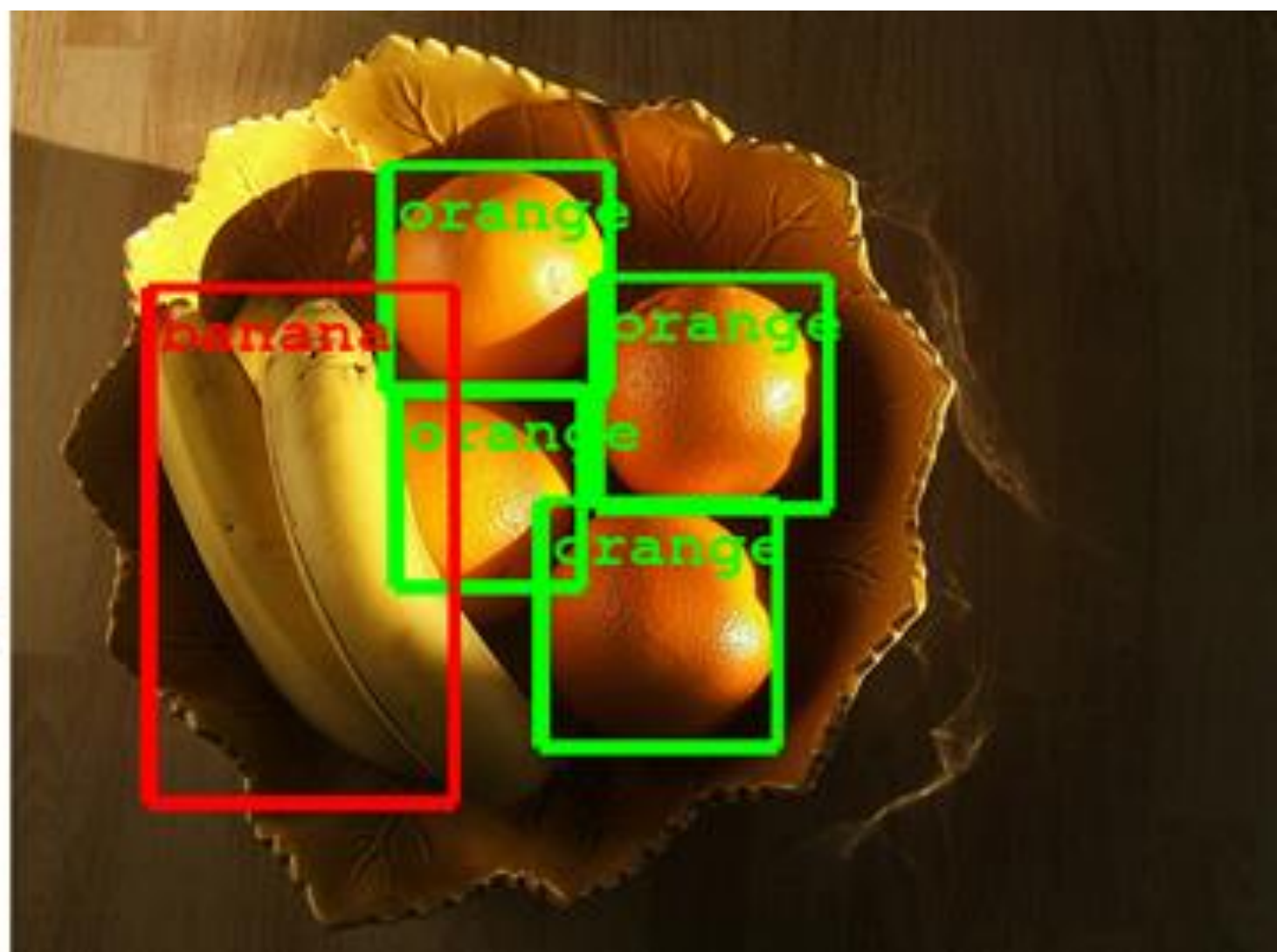
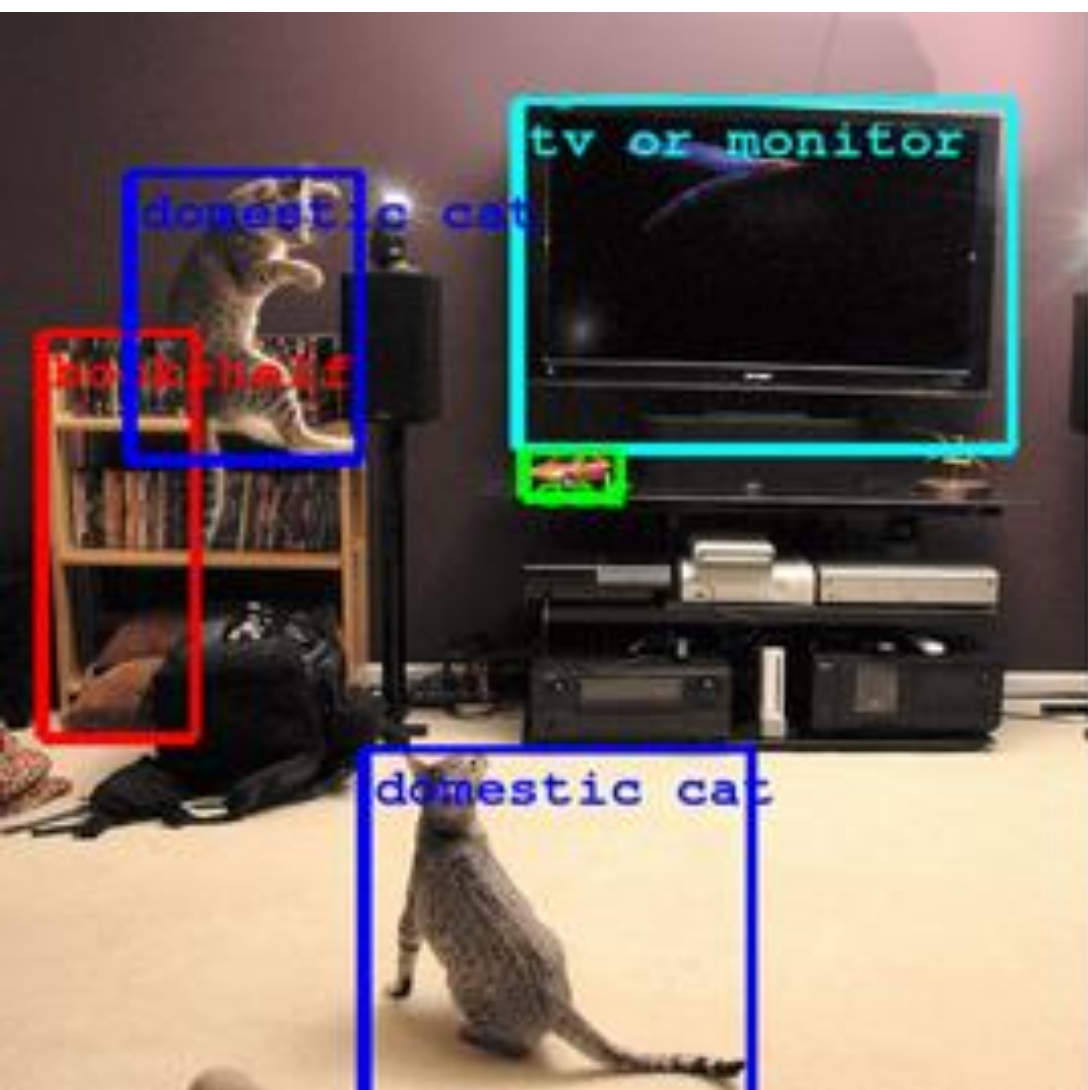


(Labeled
PHOTOS)

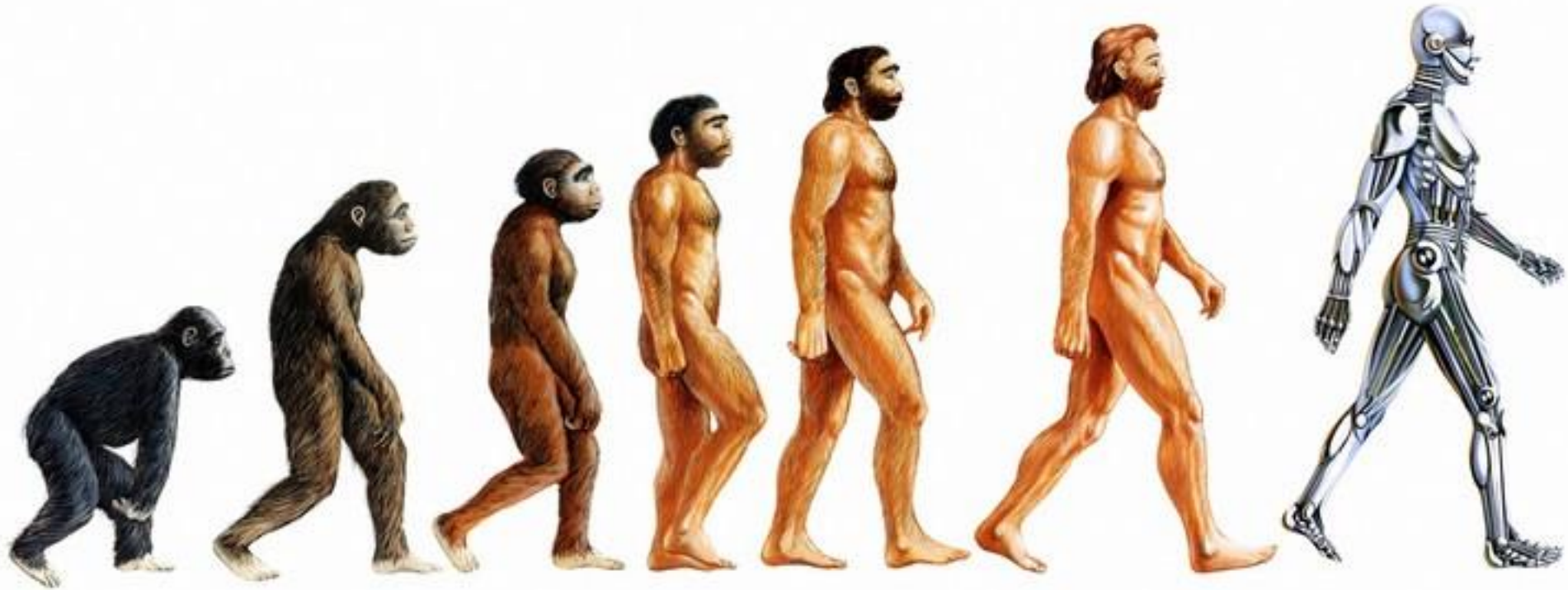
DOG



OUTPUT



Inteligência Artificial



Machine Learning



Deep Learning

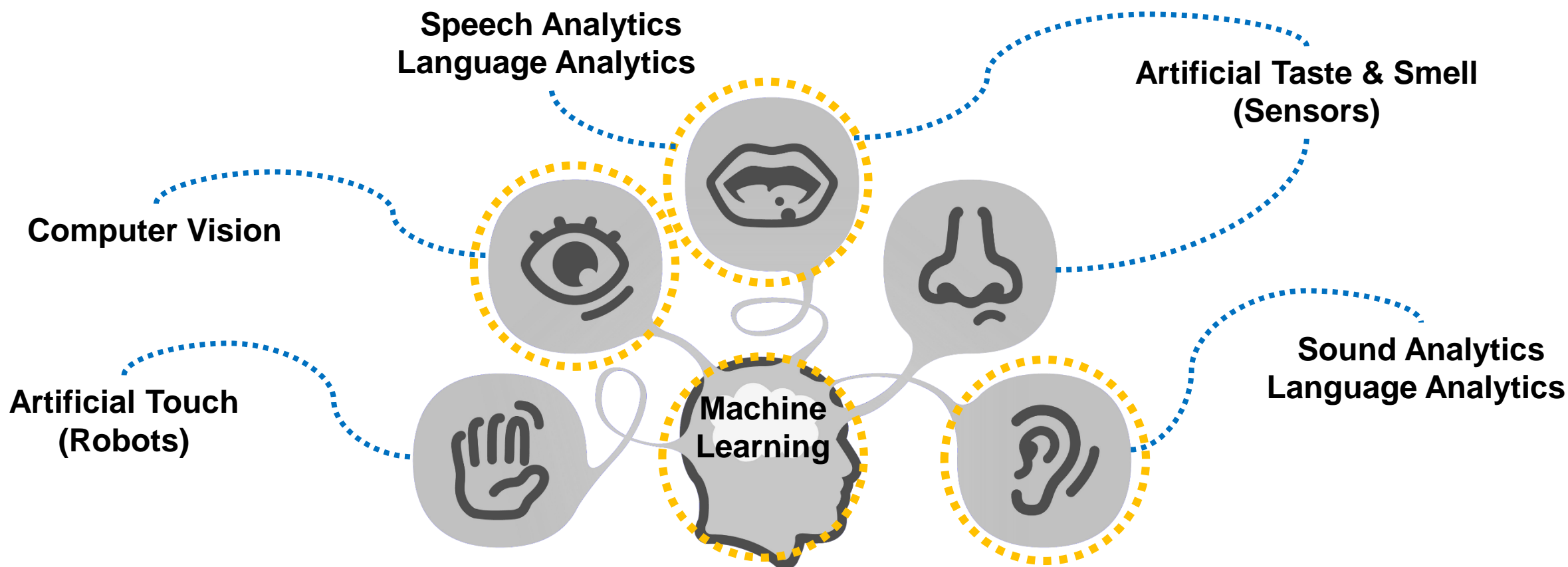


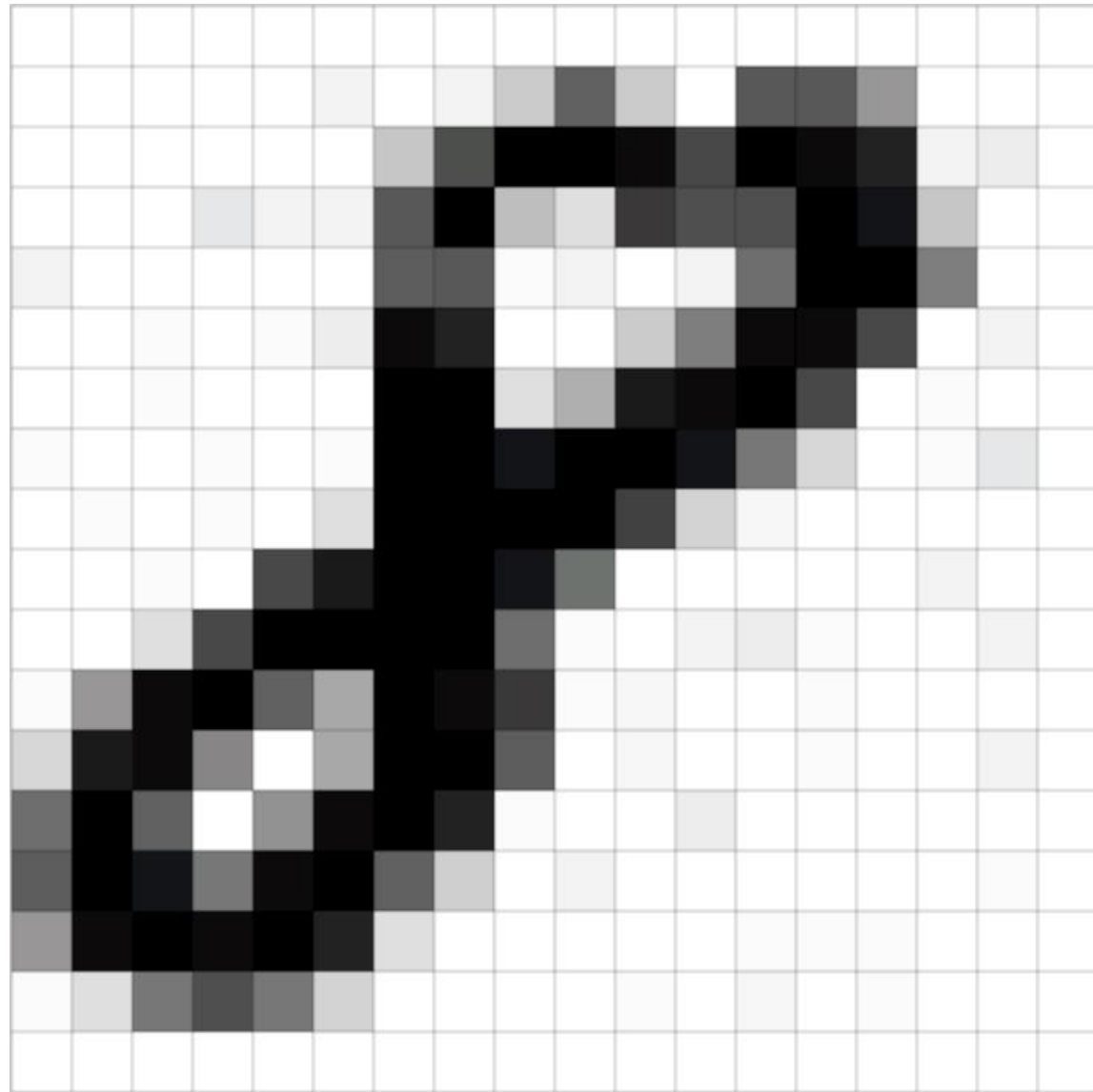
Cognitive Computing



O que é computação cognitiva?

Área da Computação que estuda e desenvolve algoritmos que “tentam” imitar o processo da Inteligência Humana, de aprender, sentir, identificar e resolver problemas.





[illegible]

Escalar

```
s = np.array(8)  
s.shape = ()
```

[8]

Vetor

```
v = np.array([1,2,3])  
v.shape = (3,)
```

[1,2,3]

Matriz

```
m = np.array([[1,2,3], [4,5,6], [7,8,9]])
```

```
m.shape = (3, 3)
```

[1,2,3]

[4,5,6]

[7,8,9]

Tensor

```
t = np.array([[[[1],[2]],[[3],[4]],[[5],[6]]],  
              [[7],[8]],[[9],[10]],[[11],[12]]],  
              [[13],[14]],[[15],[16]],[[17],[17]]])
```

```
t.shape = (3, 3, 2, 1)
```

't'
'e'
'n'
's'
'o'
'r'

Vetor

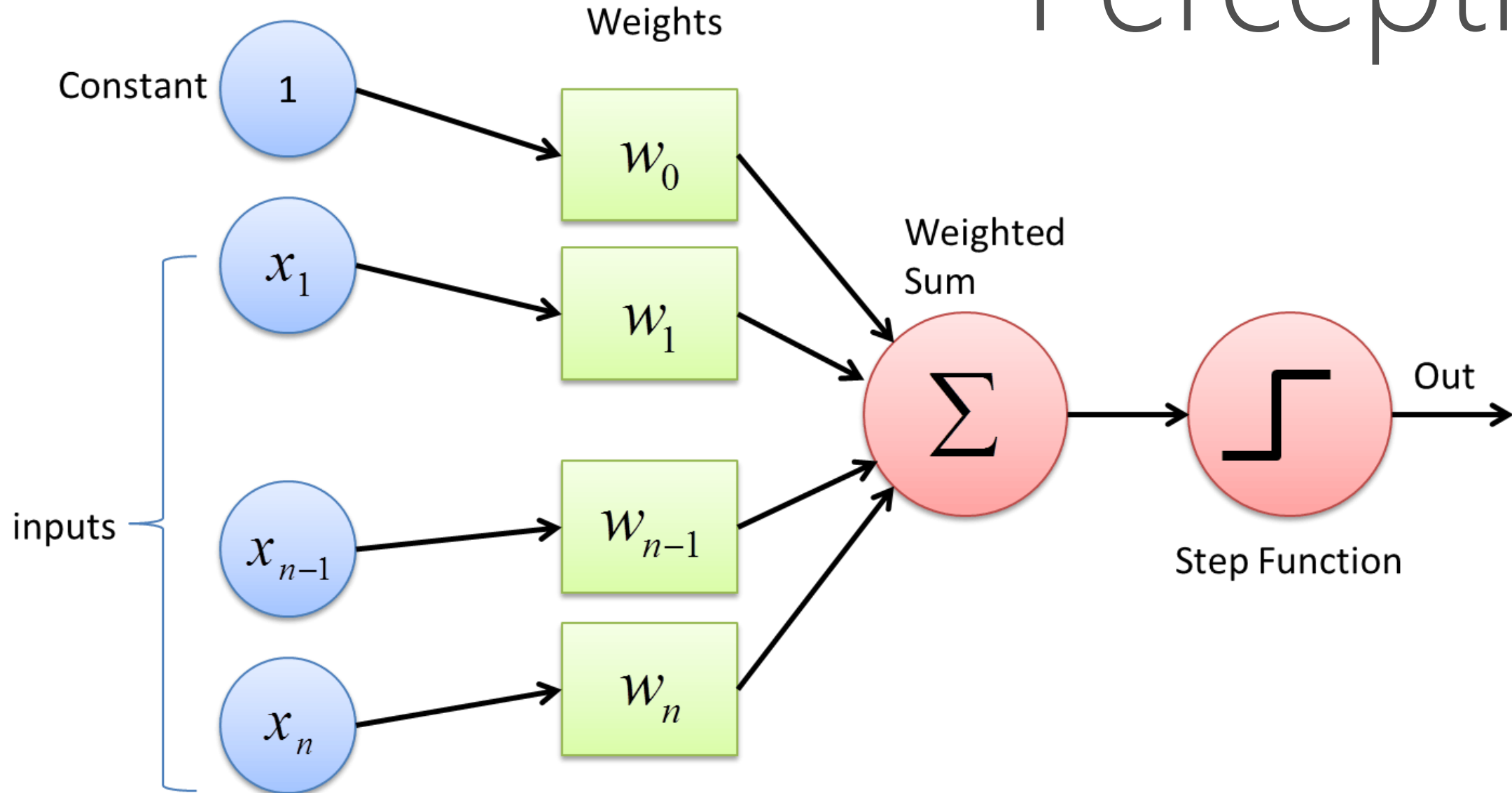
3	1	4	1
5	9	2	6
5	3	5	8
9	7	9	3
2	3	8	4
6	2	6	4

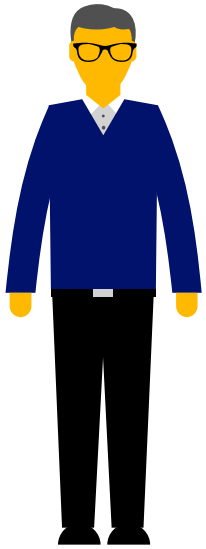
Matriz

2	1	8	8	1	8
2	8	4	5	9	0
2	3	5	3	6	0
7	4	7	1	3	5
2	7	1	3	5	2
7	4	7	1	3	5

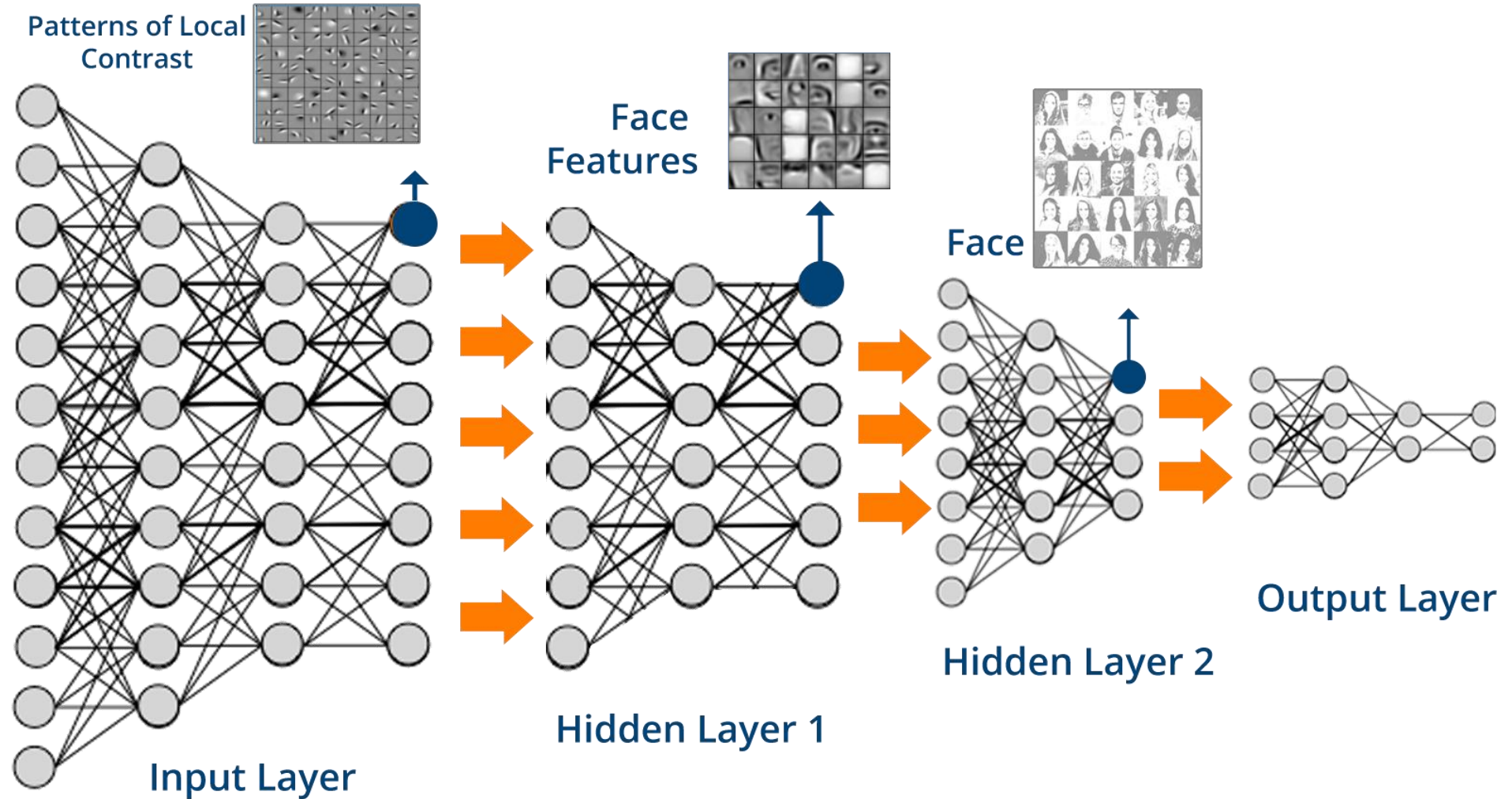
Tensor

Perceptron

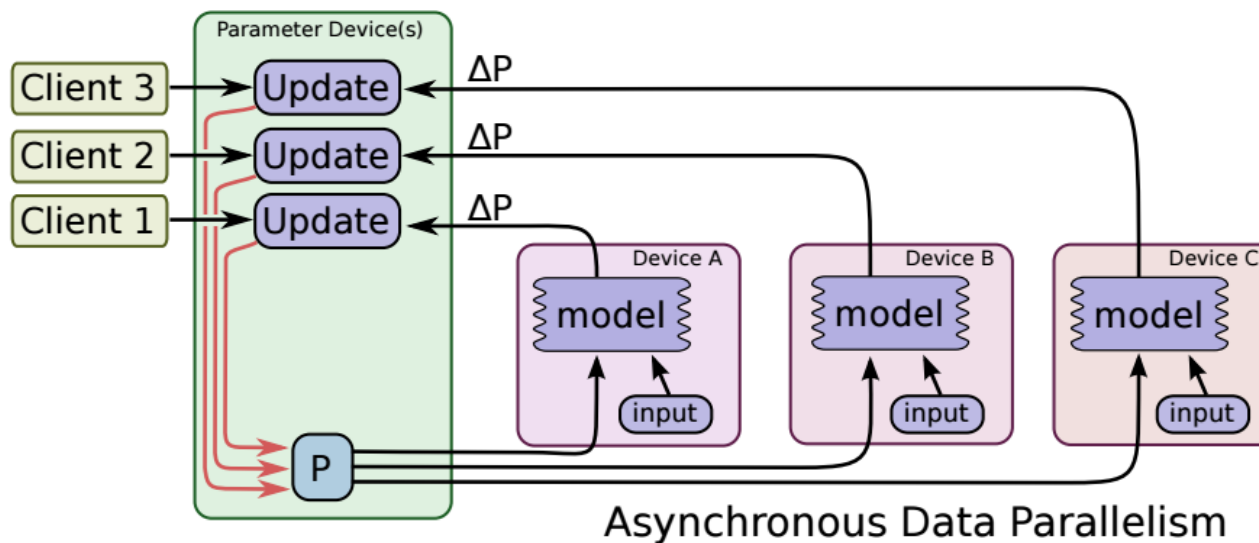
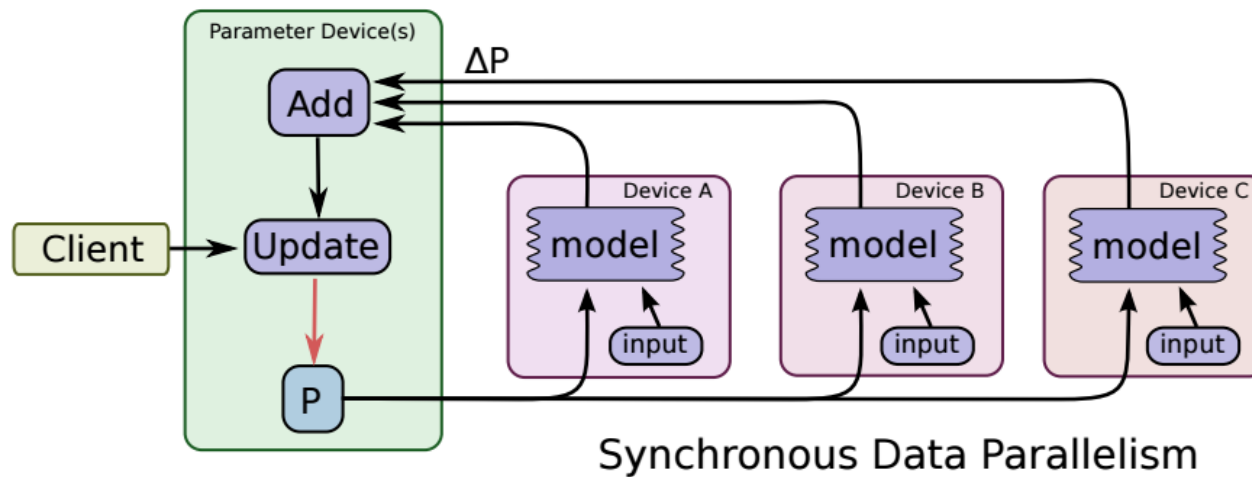




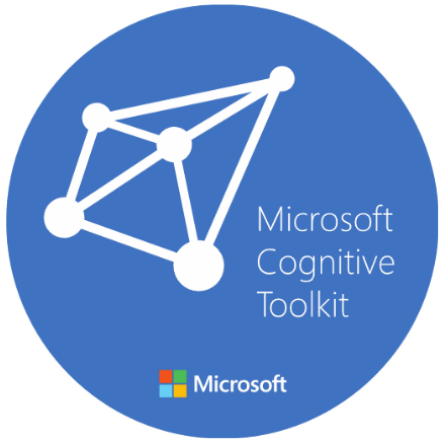
What?



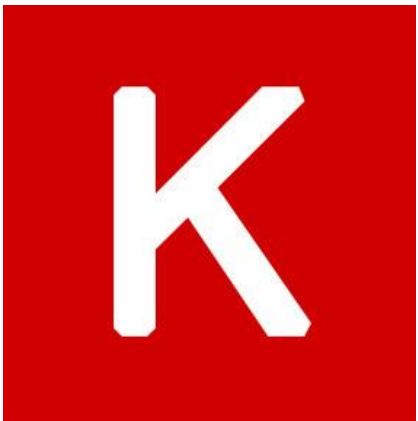
Parallel Training



Deep Learning Frameworks



theano



Caffe

Thank you!



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