INTRODUCCION A LA VISION COMPUTACIONAL

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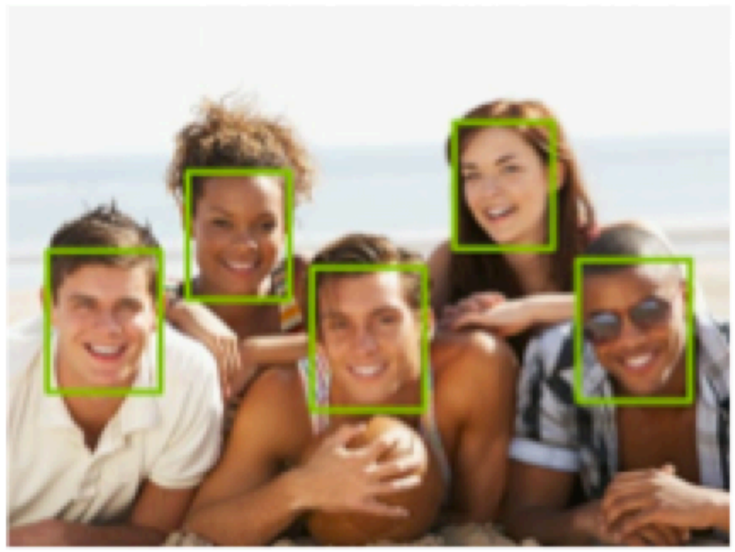
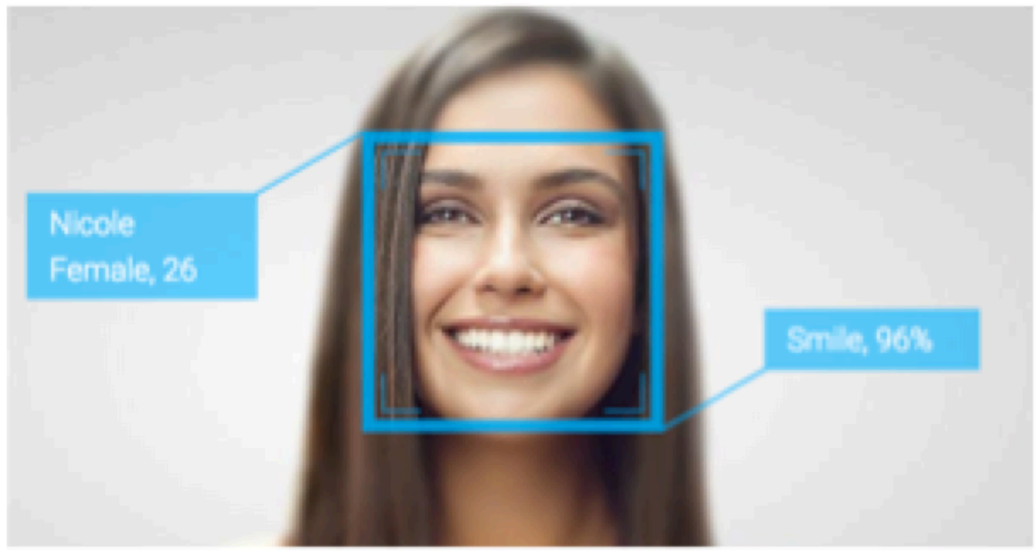
Clase 05

DETECTAR VS RECONOCER



Detectar



Reconocer

CLASE DE HOY

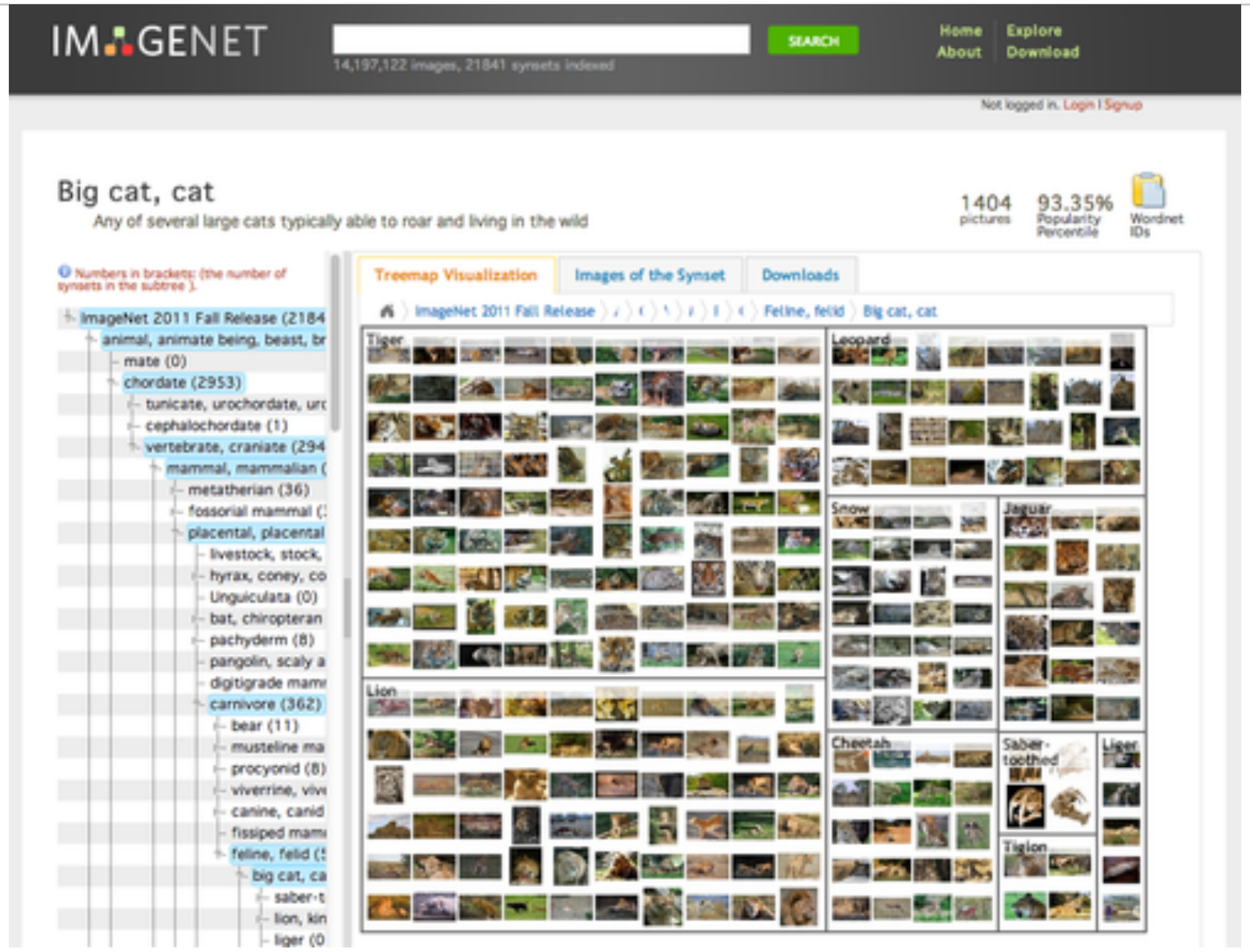
- Detectar vs reconocer
- IMAGENET
- Reconocimiento facial, LFW
- Clustering: DBSCAN
- Tarea
- Presentación

IMAGENET

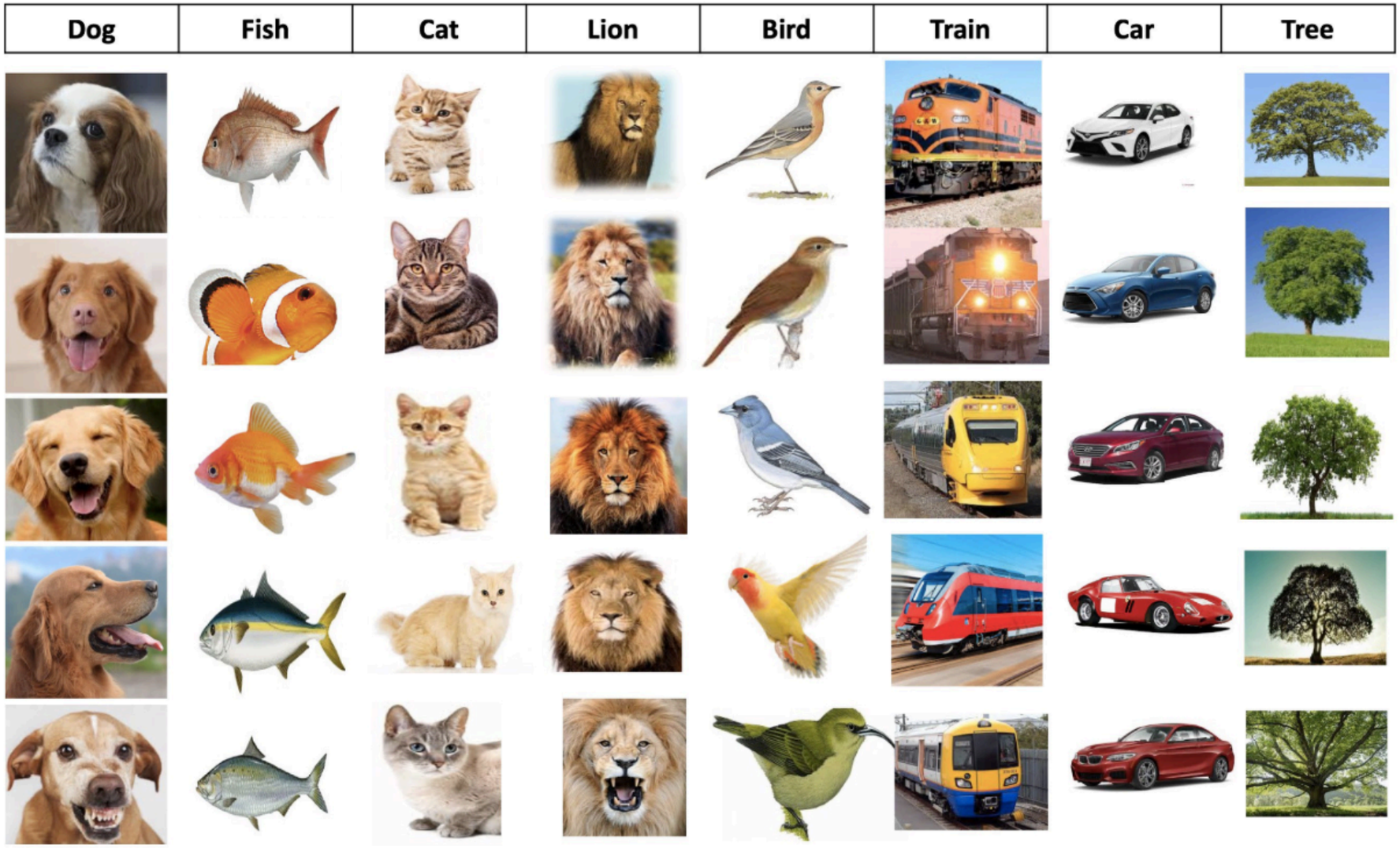
Gran base de imágenes ordenadas de acuerdo a la jerarquía Wordnet (solo los sustantivos)

http://www.image-net.org/

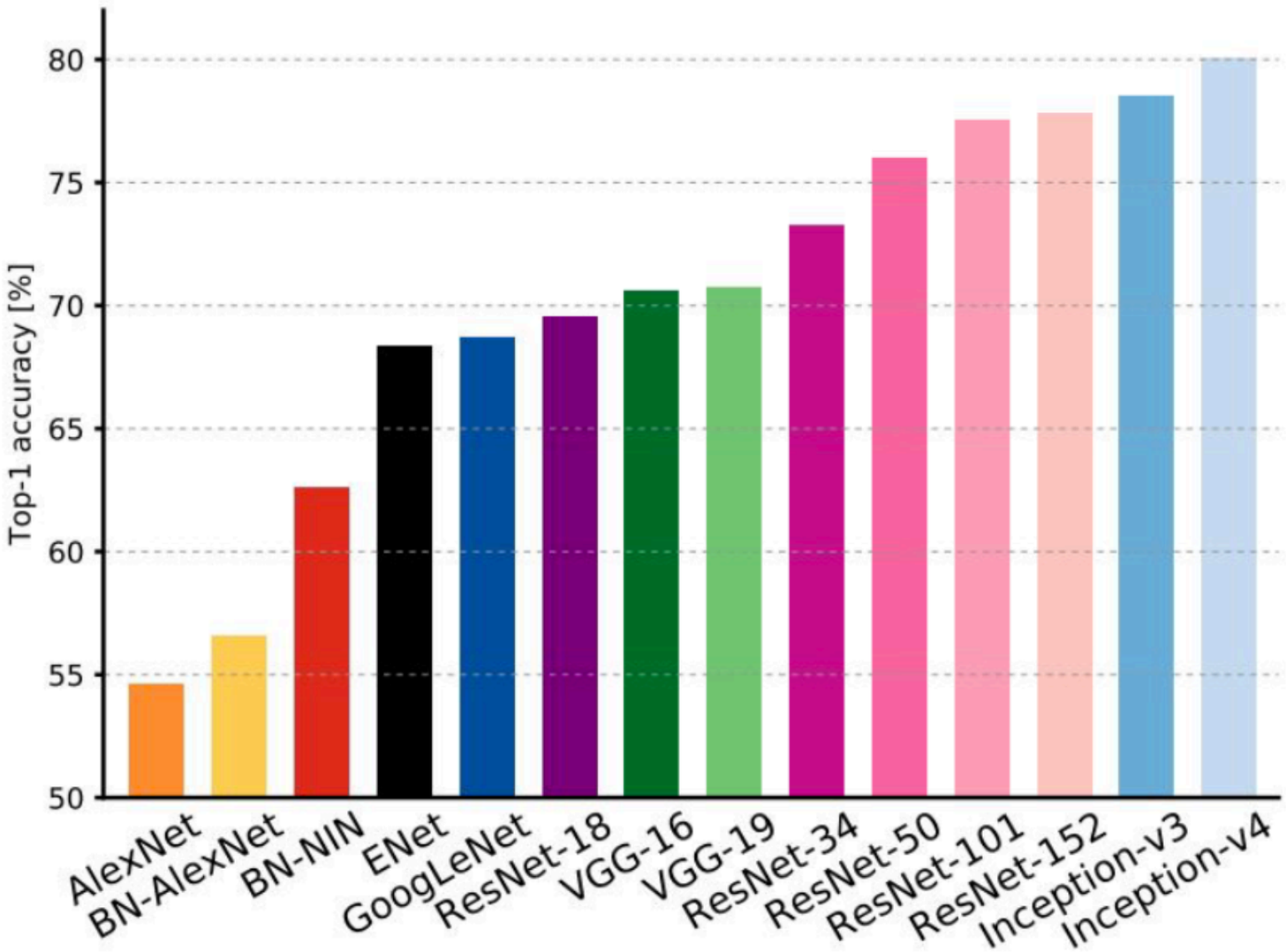
WORDNET


IMAGENET
SEARCH
14,197,122 images, 21841 synsets indexed
Home
Explore
About
Download
Not logged in. Login | Signup
Big cat, cat
Any of several large cats typically able to roar and living in the wild
1404
pictures
93.35%
Popularity
Percentile
Wordnet
IDs
Numbers in brackets: (the number of synsets in the subtree).
Treemap Visualization
Images of the Synset
Downloads
ImageNet 2011 Fall Release
Feline, felid
Big cat, cat
ImageNet 2011 Fall Release (2184
animal, animate being, beast, br
mate (0)
chordate (2953)
tunicate, urochordate, urc
cephalochordate (1)
vertebrate, craniate (294
mammal, mammalian (
metatherian (36)
fossorial mammal (
placental, placental
livestock, stock,
hyrax, coney, co
Unguiculata (0)
bat, chiropteran
pachyderm (8)
pangolin, scaly a
digitigrade mam
carnivore (362)
bear (11)
musteline ma
procyonid (8)
viverrine, vive
canine, canid
fissiped mam
feline, felid (
big cat, ca
saber-t
lion, kin
liger (0
Tiger
Leopard
Snow
Jaguar
Lion
Cheetah
Saber-toothed
Liger
Tiglon

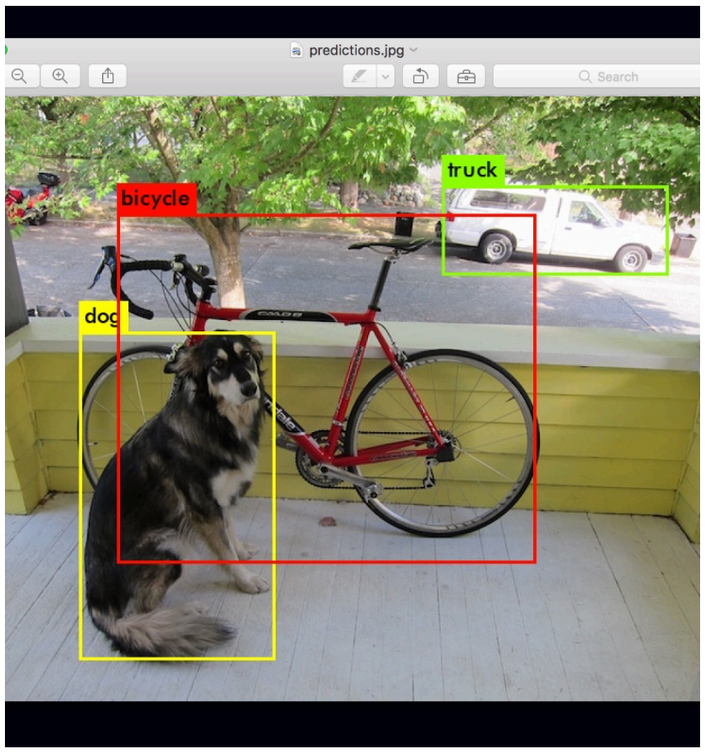
WORDNET

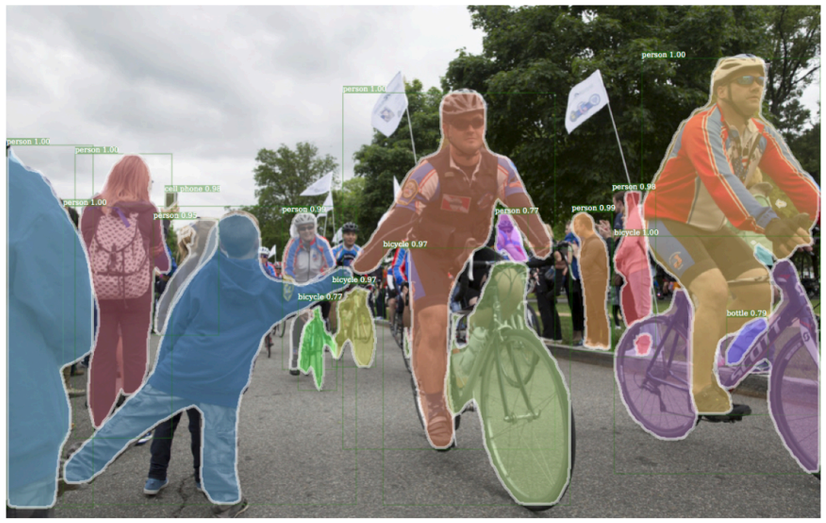


CONCURSO IMAGENET



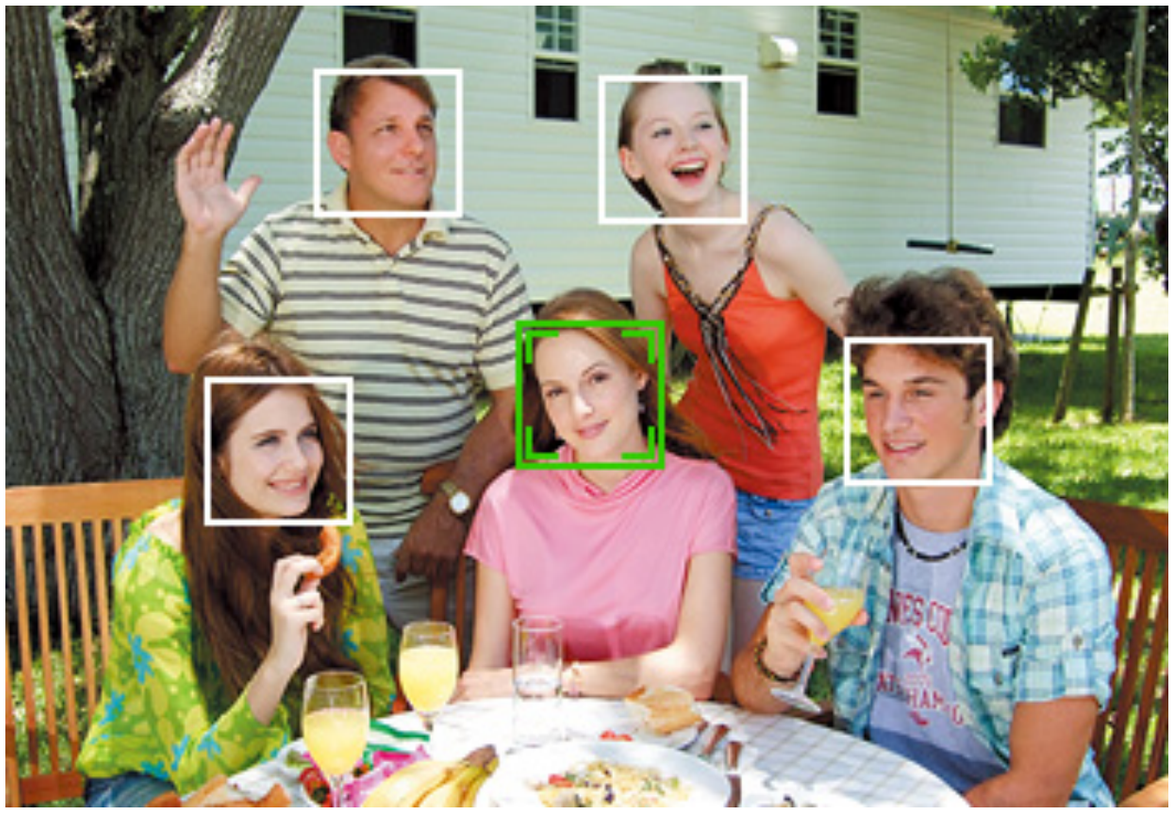
DETECTORES





Facebook: Detectron

RECONOCIMIENTO FACIAL



RECONOCIMIENTO FACIAL

Labeled Faces in the Wild Home

Base de caras

http://vis-www.cs.umass.edu/lfw/

DISCLAIMER:

Labeled Faces in the Wild is a public benchmark for face verification, also known as pair matching. No matter what the performance of an algorithm on LFW, it should not be used to conclude that an algorithm is suitable for any commercial purpose. There are many reasons for this. Here is a non-exhaustive list:

- Face verification and other forms of face recognition are very different problems. For example, it is very difficult to extrapolate from performance on verification to performance on 1:N recognition.
- Many groups are not well represented in LFW. For example, there are very few children, no babies, very few people over the age of 80, and a relatively small proportion of women. In addition, many ethnicities have very minor representation or none at all.
- While theoretically LFW could be used to assess performance for certain subgroups, the database was not designed to have enough data for strong statistical conclusions about subgroups. Simply put, LFW is not large enough to provide evidence that a particular piece of software has been thoroughly tested.
- Additional conditions, such as poor lighting, extreme pose, strong occlusions, low resolution, and other important factors do not constitute a major part of LFW. These are important areas of evaluation, especially for algorithms designed to recognize images "in the wild".

Data set pequeño! Ojo!

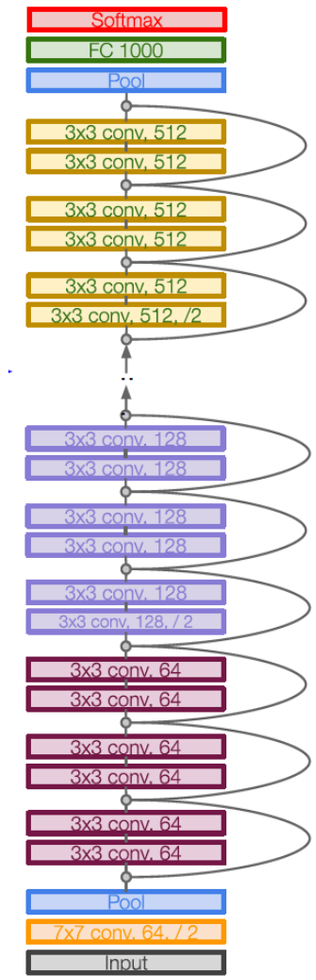
13233 imágenes
5749 personas
1680 personas con dos o más fotos

FACE_RECOGNITION

- Dlib: librería que contiene algoritmos de machine learning creada por Davis King.
- Davis King entrenó una red (ResNet-34) con dataset of ~3 millones de imágenes y la probo sobre el dataset Labeled Faces in the Wild (LFW) alcanzando una precisión (accuracy) de 99.38%.
- Face_recognition, es un wrap de la librería dlib que nos permite usar los algoritmos de reconocimiento facial de modo más simple. Creada por Adam Geitgey
-

RESNET

Output: 1000 clases



Vector de 1000 dimensiones. IMAGENET

Puedo usar las capas intermedias
y obtener
las características de una imagen

Input: imágenes

CLUSTERING: DBSCAN

- Identifica grupos por densidad. No hay que darle el numero de grupos
- Identifica outliers
- Depende principalmente de dos parámetros clave:
  - EPSILON: distancia a la que esta el punto desde un punto núcleo
  - NUMERO_MINIMO_PUNTOS: numero mínimo de puntos del grupo