*# Install tensorflow\_hub using pip install tensorflow\_hub first*

Se tiene este modelo <https://tfhub.dev/google/tf2-preview/mobilenet_v2/classification/4>

Ya esta entrenado para imágenes de animales, y le pasa una imagen de un pez dorado.

**import** numpy **as** np

**import** cv2

**import** PIL.Image **as** Image

**import** os

**import** matplotlib.pylab **as** plt

**import** tensorflow **as** tf

**import** tensorflow\_hub **as** hub

**from** tensorflow **import** keras

**from** tensorflow.keras **import** layers

**from** tensorflow.keras.models **import** Sequential

**IMAGE\_SHAPE** **=** (224, 224)

classifier **=** tf**.**keras**.**Sequential([

hub**.**KerasLayer("https://tfhub.dev/google/tf2-preview/mobilenet\_v2/classification/4",

input\_shape**=IMAGE\_SHAPE+**(3,))

])

gold\_fish **=** Image**.**open("goldfish.jpg")**.**resize(**IMAGE\_SHAPE**)

gold\_fish **=** np**.**array(gold\_fish)**/**255.0

gold\_fish**.**shape

(224, 224, 3)

result **=** classifier**.**predict(gold\_fish[np**.**newaxis, **...**])

result**.**shape

Out[8]:

(1, 1001)

**categoria** **=** np**.**argmax(result)

**categoria**

Out[9]:

2

Si nos da la categoría 2, cual es ese animal? Se carga el listado de categorías de estos links.

*#tf.keras.utils.get\_file('ImageNetLabels.txt','https://storage.googleapis.com/download.tensorflow.org/data/ImageNetLabels.txt')*

image\_labels **=** []

**with** open("ImageNetLabels.txt", "r") **as** f:

image\_labels **=** f**.**read()**.**splitlines()

image\_labels[:5]

Out[10]:

['background', 'tench', 'goldfish', 'great white shark', 'tiger shark']

Aquí se ve que las primeras 5 categorias, y la categoría 2 es goldfish

image\_labels[**categoria**]

Out[11]:

'goldfish'

*https://storage.googleapis.com/download.tensorflow.org/data/ImageNetLabels.txt*

background

tench

goldfish

great white shark

tiger shark

hammerhead

electric ray

stingray

cock

hen

ostrich

brambling

goldfinch

house finch

junco

indigo bunting

robin

bulbul

jay

magpie

chickadee

water ouzel

kite

bald eagle

vulture

great grey owl

European fire salamander

common newt

eft

spotted salamander

axolotl

bullfrog

tree frog

tailed frog

loggerhead

leatherback turtle

mud turtle

terrapin

box turtle

banded gecko

common iguana

American chameleon

whiptail

agama

frilled lizard

alligator lizard

Gila monster

green lizard

African chameleon

Komodo dragon

African crocodile

American alligator

triceratops

thunder snake

ringneck snake

hognose snake

green snake

king snake

garter snake

water snake

vine snake

night snake

boa constrictor

rock python

Indian cobra

green mamba

sea snake

horned viper

diamondback

sidewinder

trilobite

harvestman

scorpion

black and gold garden spider

barn spider

garden spider

black widow

tarantula

wolf spider

tick

centipede

black grouse

ptarmigan

ruffed grouse

prairie chicken

peacock

quail

partridge

African grey

macaw

sulphur-crested cockatoo

lorikeet

coucal

bee eater

hornbill

hummingbird

jacamar

toucan

drake

red-breasted merganser

goose

black swan

tusker

echidna

platypus

wallaby

koala

wombat

jellyfish

sea anemone

brain coral

flatworm

nematode

conch

snail

slug

sea slug

chiton

chambered nautilus

Dungeness crab

rock crab

fiddler crab

king crab

American lobster

spiny lobster

crayfish

hermit crab

isopod

white stork

black stork

spoonbill

flamingo

little blue heron

American egret

bittern

crane

limpkin

European gallinule

American coot

bustard

ruddy turnstone

red-backed sandpiper

redshank

dowitcher

oystercatcher

pelican

king penguin

albatross

grey whale

killer whale

dugong

sea lion

Chihuahua

Japanese spaniel

Maltese dog

Pekinese

Shih-Tzu

Blenheim spaniel

papillon

toy terrier

Rhodesian ridgeback

Afghan hound

basset

beagle

bloodhound

bluetick

black-and-tan coonhound

Walker hound

English foxhound

redbone

borzoi

Irish wolfhound

Italian greyhound

whippet

Ibizan hound

Norwegian elkhound

otterhound

Saluki

Scottish deerhound

Weimaraner

Staffordshire bullterrier

American Staffordshire terrier

Bedlington terrier

Border terrier

Kerry blue terrier

Irish terrier

Norfolk terrier

Norwich terrier

Yorkshire terrier

wire-haired fox terrier

Lakeland terrier

Sealyham terrier

Airedale

cairn

Australian terrier

Dandie Dinmont

Boston bull

miniature schnauzer

giant schnauzer

standard schnauzer

Scotch terrier

Tibetan terrier

silky terrier

soft-coated wheaten terrier

West Highland white terrier

Lhasa

flat-coated retriever

curly-coated retriever

golden retriever

Labrador retriever

Chesapeake Bay retriever

German short-haired pointer

vizsla

English setter

Irish setter

Gordon setter

Brittany spaniel

clumber

English springer

Welsh springer spaniel

cocker spaniel

Sussex spaniel

Irish water spaniel

kuvasz

schipperke

groenendael

malinois

briard

kelpie

komondor

Old English sheepdog

Shetland sheepdog

collie

Border collie

Bouvier des Flandres

Rottweiler

German shepherd

Doberman

miniature pinscher

Greater Swiss Mountain dog

Bernese mountain dog

Appenzeller

EntleBucher

boxer

bull mastiff

Tibetan mastiff

French bulldog

Great Dane

Saint Bernard

Eskimo dog

malamute

Siberian husky

dalmatian

affenpinscher

basenji

pug

Leonberg

Newfoundland

Great Pyrenees

Samoyed

Pomeranian

chow

keeshond

Brabancon griffon

Pembroke

Cardigan

toy poodle

miniature poodle

standard poodle

Mexican hairless

timber wolf

white wolf

red wolf

coyote

dingo

dhole

African hunting dog

hyena

red fox

kit fox

Arctic fox

grey fox

tabby

tiger cat

Persian cat

Siamese cat

Egyptian cat

cougar

lynx

leopard

snow leopard

jaguar

lion

tiger

cheetah

brown bear

American black bear

ice bear

sloth bear

mongoose

meerkat

tiger beetle

ladybug

ground beetle

long-horned beetle

leaf beetle

dung beetle

rhinoceros beetle

weevil

fly

bee

ant

grasshopper

cricket

walking stick

cockroach

mantis

cicada

leafhopper

lacewing

dragonfly

damselfly

admiral

ringlet

monarch

cabbage butterfly

sulphur butterfly

lycaenid

starfish

sea urchin

sea cucumber

wood rabbit

hare

Angora

hamster

porcupine

fox squirrel

marmot

beaver

guinea pig

sorrel

zebra

hog

wild boar

warthog

hippopotamus

ox

water buffalo

bison

ram

bighorn

ibex

hartebeest

impala

gazelle

Arabian camel

llama

weasel

mink

polecat

black-footed ferret

otter

skunk

badger

armadillo

three-toed sloth

orangutan

gorilla

chimpanzee

gibbon

siamang

guenon

patas

baboon

macaque

langur

colobus

proboscis monkey

marmoset

capuchin

howler monkey

titi

spider monkey

squirrel monkey

Madagascar cat

indri

Indian elephant

African elephant

lesser panda

giant panda

barracouta

eel

coho

rock beauty

anemone fish

sturgeon

gar

lionfish

puffer

abacus

abaya

academic gown

accordion

acoustic guitar

aircraft carrier

airliner

airship

altar

ambulance

amphibian

analog clock

apiary

apron

ashcan

assault rifle

backpack

bakery

balance beam

balloon

ballpoint

Band Aid

banjo

bannister

barbell

barber chair

barbershop

barn

barometer

barrel

barrow

baseball

basketball

bassinet

bassoon

bathing cap

bath towel

bathtub

beach wagon

beacon

beaker

bearskin

beer bottle

beer glass

bell cote

bib

bicycle-built-for-two

bikini

binder

binoculars

birdhouse

boathouse

bobsled

bolo tie

bonnet

bookcase

bookshop

bottlecap

bow

bow tie

brass

brassiere

breakwater

breastplate

broom

bucket

buckle

bulletproof vest

bullet train

butcher shop

cab

caldron

candle

cannon

canoe

can opener

cardigan

car mirror

carousel

carpenter's kit

carton

car wheel

cash machine

cassette

cassette player

castle

catamaran

CD player

cello

cellular telephone

chain

chainlink fence

chain mail

chain saw

chest

chiffonier

chime

china cabinet

Christmas stocking

church

cinema

cleaver

cliff dwelling

cloak

clog

cocktail shaker

coffee mug

coffeepot

coil

combination lock

computer keyboard

confectionery

container ship

convertible

corkscrew

cornet

cowboy boot

cowboy hat

cradle

crane

crash helmet

crate

crib

Crock Pot

croquet ball

crutch

cuirass

dam

desk

desktop computer

dial telephone

diaper

digital clock

digital watch

dining table

dishrag

dishwasher

disk brake

dock

dogsled

dome

doormat

drilling platform

drum

drumstick

dumbbell

Dutch oven

electric fan

electric guitar

electric locomotive

entertainment center

envelope

espresso maker

face powder

feather boa

file

fireboat

fire engine

fire screen

flagpole

flute

folding chair

football helmet

forklift

fountain

fountain pen

four-poster

freight car

French horn

frying pan

fur coat

garbage truck

gasmask

gas pump

goblet

go-kart

golf ball

golfcart

gondola

gong

gown

grand piano

greenhouse

grille

grocery store

guillotine

hair slide

hair spray

half track

hammer

hamper

hand blower

hand-held computer

handkerchief

hard disc

harmonica

harp

harvester

hatchet

holster

home theater

honeycomb

hook

hoopskirt

horizontal bar

horse cart

hourglass

iPod

iron

jack-o'-lantern

jean

jeep

jersey

jigsaw puzzle

jinrikisha

joystick

kimono

knee pad

knot

lab coat

ladle

lampshade

laptop

lawn mower

lens cap

letter opener

library

lifeboat

lighter

limousine

liner

lipstick

Loafer

lotion

loudspeaker

loupe

lumbermill

magnetic compass

mailbag

mailbox

maillot

maillot

manhole cover

maraca

marimba

mask

matchstick

maypole

maze

measuring cup

medicine chest

megalith

microphone

microwave

military uniform

milk can

minibus

miniskirt

minivan

missile

mitten

mixing bowl

mobile home

Model T

modem

monastery

monitor

moped

mortar

mortarboard

mosque

mosquito net

motor scooter

mountain bike

mountain tent

mouse

mousetrap

moving van

muzzle

nail

neck brace

necklace

nipple

notebook

obelisk

oboe

ocarina

odometer

oil filter

organ

oscilloscope

overskirt

oxcart

oxygen mask

packet

paddle

paddlewheel

padlock

paintbrush

pajama

palace

panpipe

paper towel

parachute

parallel bars

park bench

parking meter

passenger car

patio

pay-phone

pedestal

pencil box

pencil sharpener

perfume

Petri dish

photocopier

pick

pickelhaube

picket fence

pickup

pier

piggy bank

pill bottle

pillow

ping-pong ball

pinwheel

pirate

pitcher

plane

planetarium

plastic bag

plate rack

plow

plunger

Polaroid camera

pole

police van

poncho

pool table

pop bottle

pot

potter's wheel

power drill

prayer rug

printer

prison

projectile

projector

puck

punching bag

purse

quill

quilt

racer

racket

radiator

radio

radio telescope

rain barrel

recreational vehicle

reel

reflex camera

refrigerator

remote control

restaurant

revolver

rifle

rocking chair

rotisserie

rubber eraser

rugby ball

rule

running shoe

safe

safety pin

saltshaker

sandal

sarong

sax

scabbard

scale

school bus

schooner

scoreboard

screen

screw

screwdriver

seat belt

sewing machine

shield

shoe shop

shoji

shopping basket

shopping cart

shovel

shower cap

shower curtain

ski

ski mask

sleeping bag

slide rule

sliding door

slot

snorkel

snowmobile

snowplow

soap dispenser

soccer ball

sock

solar dish

sombrero

soup bowl

space bar

space heater

space shuttle

spatula

speedboat

spider web

spindle

sports car

spotlight

stage

steam locomotive

steel arch bridge

steel drum

stethoscope

stole

stone wall

stopwatch

stove

strainer

streetcar

stretcher

studio couch

stupa

submarine

suit

sundial

sunglass

sunglasses

sunscreen

suspension bridge

swab

sweatshirt

swimming trunks

swing

switch

syringe

table lamp

tank

tape player

teapot

teddy

television

tennis ball

thatch

theater curtain

thimble

thresher

throne

tile roof

toaster

tobacco shop

toilet seat

torch

totem pole

tow truck

toyshop

tractor

trailer truck

tray

trench coat

tricycle

trimaran

tripod

triumphal arch

trolleybus

trombone

tub

turnstile

typewriter keyboard

umbrella

unicycle

upright

vacuum

vase

vault

velvet

vending machine

vestment

viaduct

violin

volleyball

waffle iron

wall clock

wallet

wardrobe

warplane

washbasin

washer

water bottle

water jug

water tower

whiskey jug

whistle

wig

window screen

window shade

Windsor tie

wine bottle

wing

wok

wooden spoon

wool

worm fence

wreck

yawl

yurt

web site

comic book

crossword puzzle

street sign

traffic light

book jacket

menu

plate

guacamole

consomme

hot pot

trifle

ice cream

ice lolly

French loaf

bagel

pretzel

cheeseburger

hotdog

mashed potato

head cabbage

broccoli

cauliflower

zucchini

spaghetti squash

acorn squash

butternut squash

cucumber

artichoke

bell pepper

cardoon

mushroom

Granny Smith

strawberry

orange

lemon

fig

pineapple

banana

jackfruit

custard apple

pomegranate

hay

carbonara

chocolate sauce

dough

meat loaf

pizza

potpie

burrito

red wine

espresso

cup

eggnog

alp

bubble

cliff

coral reef

geyser

lakeside

promontory

sandbar

seashore

valley

volcano

ballplayer

groom

scuba diver

rapeseed

daisy

yellow lady's slipper

corn

acorn

hip

buckeye

coral fungus

agaric

gyromitra

stinkhorn

earthstar

hen-of-the-woods

bolete

ear

toilet tissue