# DLAI Project: **Quick Draw! Kaggle Competition**

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# **Introduction**

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This project is performed in the subject of Deep Learning for Artificial Intelligence (DLAI) as a part of the Master in Telecommunication Engineering. The team members are the following ones: Marina Alonso, Martí Busquets, Ponç Palau and Carles Pitarque.

# **Project Description**

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This project…

# **Dataset Reduction**

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The dataset of the competition consists of 200 classes:

alarm clock.csv bowtie.csv cooler.csv foot.csv key.csv parachute.csv school bus.csv stove.csv

ambulance.csv brain.csv crocodile.csv fork.csv ladder.csv parrot.csv scorpion.csv string bean.csv

animal migration.csv bread.csv cruise ship.csv frog.csv lantern.csv passport.csv screwdriver.csv suitcase.csv

ant.csv bridge.csv cup.csv frying pan.csv leaf.csv peanut.csv see saw.csv sweater.csv

anvil.csv broccoli.csv diamond.csv garden hose.csv lighthouse.csv pear.csv shark.csv sword.csv

apple.csv bucket.csv dishwasher.csv goatee.csv lightning.csv pencil.csv shoe.csv telephone.csv

axe.csv bus.csv diving board.csv grapes.csv line.csv penguin.csv shovel.csv tennis racquet.csv

backpack.csv bush.csv dog.csv grass.csv lipstick.csv pickup truck.csv sink.csv tent.csv

banana.csv calendar.csv donut.csv guitar.csv mailbox.csv picture frame.csv skull.csv tiger.csv

barn.csv camel.csv dresser.csv hand.csv marker.csv pig.csv skyscraper.csv toe.csv

baseball bat.csv camera.csv drums.csv hat.csv megaphone.csv pillow.csv sleeping bag.csv toilet.csv

basketball.csv camouflage.csv dumbbell.csv headphones.csv mermaid.csv pizza.csv smiley face.csv tornado.csv

bat.csv campfire.csv elbow.csv hedgehog.csv microphone.csv pool.csv snake.csv traffic light.csv

bathtub.csv cannon.csv eraser.csv helicopter.csv microwave.csv popsicle.csv snorkel.csv train.csv

beach.csv canoe.csv face.csv hockey puck.csv monkey.csv purse.csv snowman.csv trombone.csv

bear.csv castle.csv fence.csv hockey stick.csv moon.csv rabbit.csv soccer ball.csv trumpet.csv

beard.csv cat.csv finger.csv horse.csv mosquito.csv raccoon.csv speedboat.csv underwear.csv

bed.csv ceiling fan.csv fire hydrant.csv hospital.csv mountain.csv rain.csv spreadsheet.csv vase.csv

bench.csv cell phone.csv fireplace.csv hot air balloon.csv mouth.csv rake.csv squiggle.csv washing machine.csv

birthday cake.csv chandelier.csv firetruck.csv hourglass.csv mug.csv remote control.csv squirrel.csv whale.csv

blackberry.csv church.csv flamingo.csv house plant.csv nail.csv river.csv star.csv wheel.csv

blueberry.csv cloud.csv flip flops.csv jacket.csv ocean.csv sailboat.csv steak.csv wine bottle.csv

book.csv coffee cup.csv floor lamp.csv jail.csv octagon.csv sandwich.csv stereo.csv yoga.csv

boomerang.csv compass.csv flower.csv kangaroo.csv onion.csv saw.csv stitches.csv zigzag.csv

bottlecap.csv cookie.csv flying saucer.csv keyboard.csv panda.csv saxophone.csv stop sign.csv

In order to reduce the dataset to a reasonable size, we have chosen to work with the following classes:

key.csv banana.csv ladder.csv tennis racket.csv pizza.csv

stop sign.csv wheel.csv fork.csv book.csv apple.csv

The election of these classes has not been random. We have performed it taking into account its level of complexity and abstraction (we have chosen simple concept classes) and the correlation between them (we have chosen classes that have some similarity of shape or texture between them). We wanted to have a dataset of simple classes but that had some similarity between them in order to have a challenging problem and to be able to really differentiate the performance of the three architectures that will be studied.

# **Multilayer Perceptron**

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## Implementation

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## Results

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# **Convolutional Neural Network (CNN)**

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## Implementation

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## Results

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# **Recurrent Neural Network (RNN)**

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## Implementation

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## Results

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# **Conclusions**

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