

MAI

Deep Learning

Guided lab

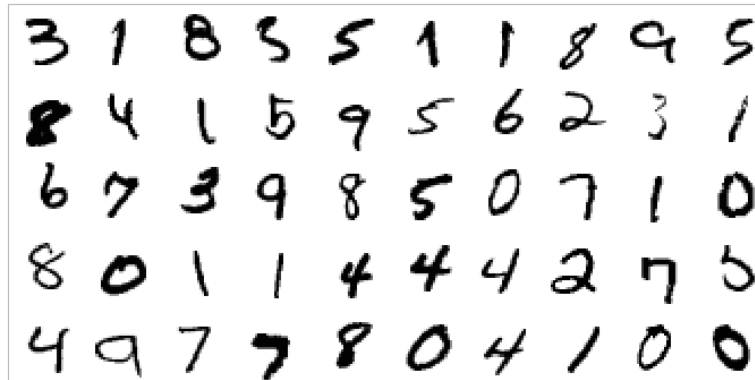
FNN & CNN



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MNIST example

- MNIST is a black and white hand-written digit recognition dataset
- See how far you can get using a fully connected network



MNIST example

Code:

https://raw.githubusercontent.com/UPC-MAI-DL/UPC-MAI-DL.github.io/master/_codes/1.FNN-CNN/mnist_fnn_example.py

Launcher:

https://raw.githubusercontent.com/UPC-MAI-DL/UPC-MAI-DL.github.io/master/_codes/1.FNN-CNN/launcher.sh



MNIST example

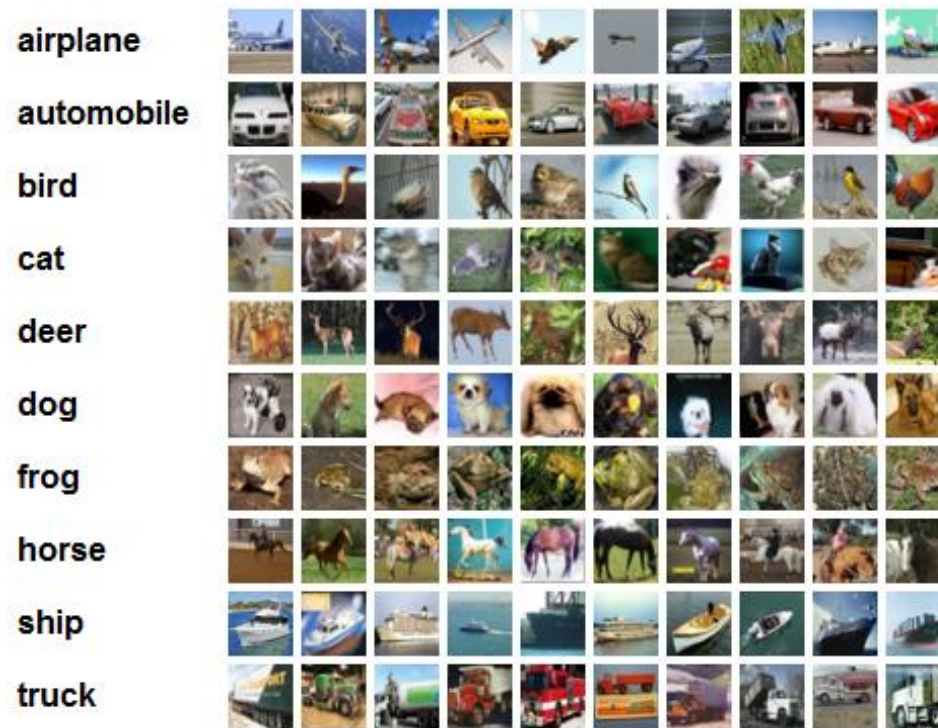
- Going convolutional

Let's try defining a CNN instead. Try on your own, or use the following example:

https://raw.githubusercontent.com/UPC-MAI-DL/UPC-MAI-DL.github.io/master/codes/1.FNN-CNN/mnist_cnn_example.py

CIFAR10 example

- CIFAR is a classification problem of low-resolution images (32x32)



- <https://www.cs.toronto.edu/~kriz/cifar.html>

CIFAR10 example

- To get the data, run the command locally:

```
import keras
from keras.datasets import cifar10
(x_train, y_train), (x_test, y_test)
    = cifar10.load_data()
```

- Upload your local .keras/dataset files to MT
- Due to version disparity, you may need to rename the file in MT to:

```
cifar-10-batches-py.tar.gz
```

CIFAR10 example

- Try first with a FNN
- You will need to adapt the input
 - Now you have 3 channels
- Once you are happy with your performance, try a CNN

Moving forward

- Preparing and loading the data is an essential part of the process. Get used to it
- Loading the whole dataset is rarely feasible
 - Look into "[flow_from_directory](#)" from keras to avoid memory issues