Práctica 2

Redes Neuronales

Curso 2023/2024

Máster Universitario en Inteligencia Artificial, Reconocimiento
de Formas e Imagen Digital

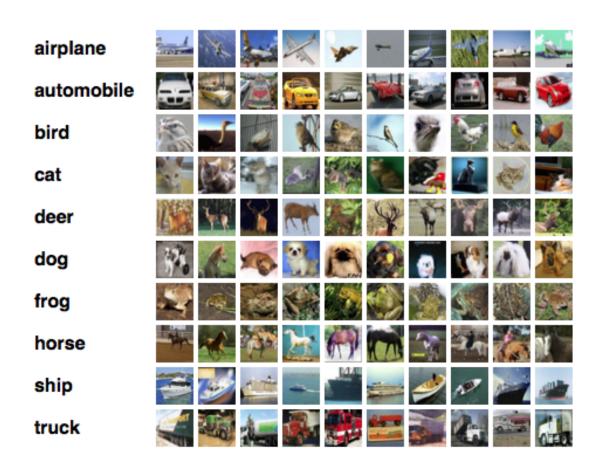Departamento de Sistemas Informáticos y Computación

Goals

- Implement generalization and performance improvements:

  – Drop-out
  – Batch norm
  – Noise regularization
  – Learning rate annealing
  – ...

- Improvements just tested over MNIST using Fully Connected (FC)

- **Implement convolutional networks (CNNs)**

- **Test these improvements over CIFAR-10 using CNNs**

CIFAR-10

- Images of 10 different classes

- Size 3x32x32 pixels

- 50K training, 10K test

CIFAR Convolutional Nets

- Use CNNs

- Improvements:

  - Dropout
  - Batch norm
  - Noise regularization
  - Learning rate schedulers
  - Deeper CNNs
  - Data augmentation
  - Residual connections

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Lab Evaluation

- CIFAR up to 2 points:

Dataset	Error	Points
CIFAR Conv	14%	0.5
CIFAR Conv	12%	0.5
CIFAR Conv	10%	0.5
CIFAR Conv	8%	0.5