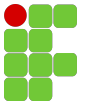
Machine Learning Autoencoder Applied to Communication Channels

Eduardo Dadalto Camara Gomes1 1Institut Supérieur de l'Aéronautique et de l'Espace (ISAE-SUPAERO), Université de Toulouse, 31055 Toulouse, FRANCE
Email: eduardo.dadalto-camara-gomes@student.isae-supaero.fr

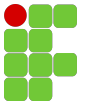
Institut Supérieur de l'Aéronautique et de l'Espace
Campus Toulouse

June 14, 2019

Schedule



Overview



Overview

Normal text Alert Text Example Text **Emphasis Text**

Simple block

- ...

Example block

- ...

Alert block

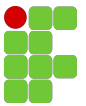
- ...

A purple box

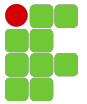
An orange box

A gray box

My price table			
Color	Price 1	Price 2	Price 3
Red	10.00	20.00	30.00
Green	20.00	30.00	40.00
Blue	30.00	40.00	50.00
Orange	60.00	90.00	120.00



Blocks



Blocks types

Simple block

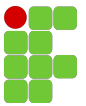
- First point
- Second point
- Third point

Examples block

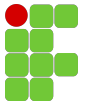
- First point
- Second point
- Third point

Alert block

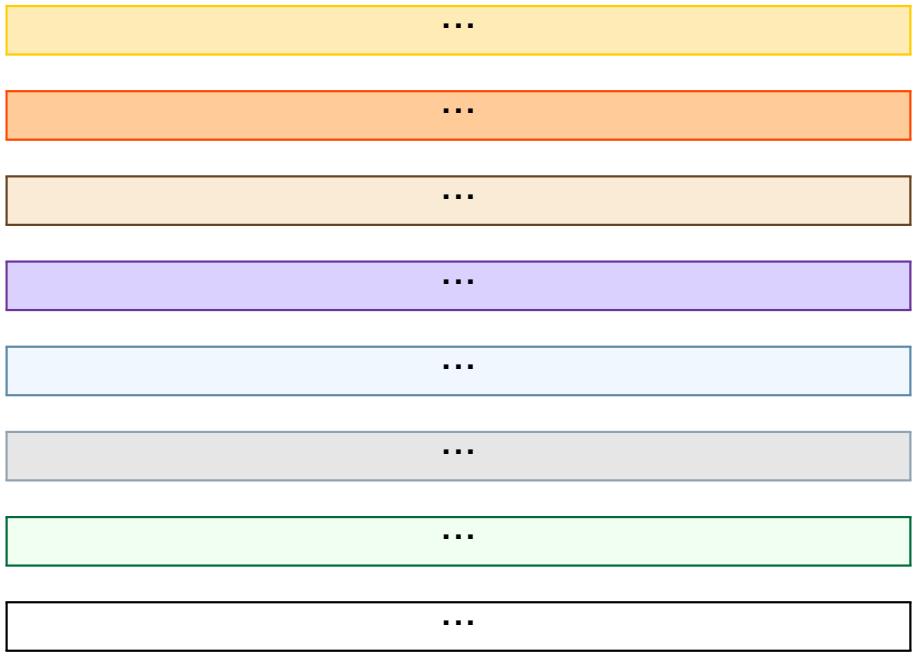
- First point
- Second point
- Third point



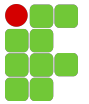
Boxes



Boxes

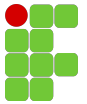


Lists



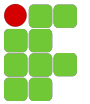
Items

- ...
- ...
- ...



Numbered

1. ...
2. ...
3. ...

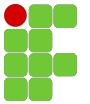


Descriptive

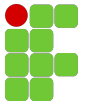
Theme 1: ...

Theme 2: ...

Theme 3: ...



Tables



Tables 1

My price table		
Couleur	Prix 1	Prix 2
Rouge	10.00	20.00
Vert	20.00	30.00
Bleu	30.00	40.00
Orange	60.00	90.00

My price table		
Couleur	Prix 1	Prix 2
Rouge	10.00	20.00
Vert	20.00	30.00
Bleu	30.00	40.00
Orange	60.00	90.00

My price table		
Couleur	Prix 1	Prix 2
Rouge	10.00	20.00
Vert	20.00	30.00
Bleu	30.00	40.00
Orange	60.00	90.00

My price table		
Couleur	Prix 1	Prix 2
Rouge	10.00	20.00
Vert	20.00	30.00
Bleu	30.00	40.00
Orange	60.00	90.00

Tables 2

My price table		
Couleur	Prix 1	Prix 2
Rouge	10.00	20.00
Vert	20.00	30.00
Bleu	30.00	40.00
Orange	60.00	90.00

My price table		
Couleur	Prix 1	Prix 2
Rouge	10.00	20.00
Vert	20.00	30.00
Bleu	30.00	40.00
Orange	60.00	90.00

My price table		
Couleur	Prix 1	Prix 2
Rouge	10.00	20.00
Vert	20.00	30.00
Bleu	30.00	40.00
Orange	60.00	90.00

My price table		
Couleur	Prix 1	Prix 2
Rouge	10.00	20.00
Vert	20.00	30.00
Bleu	30.00	40.00
Orange	60.00	90.00

Figures

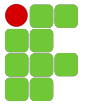


Figure Example

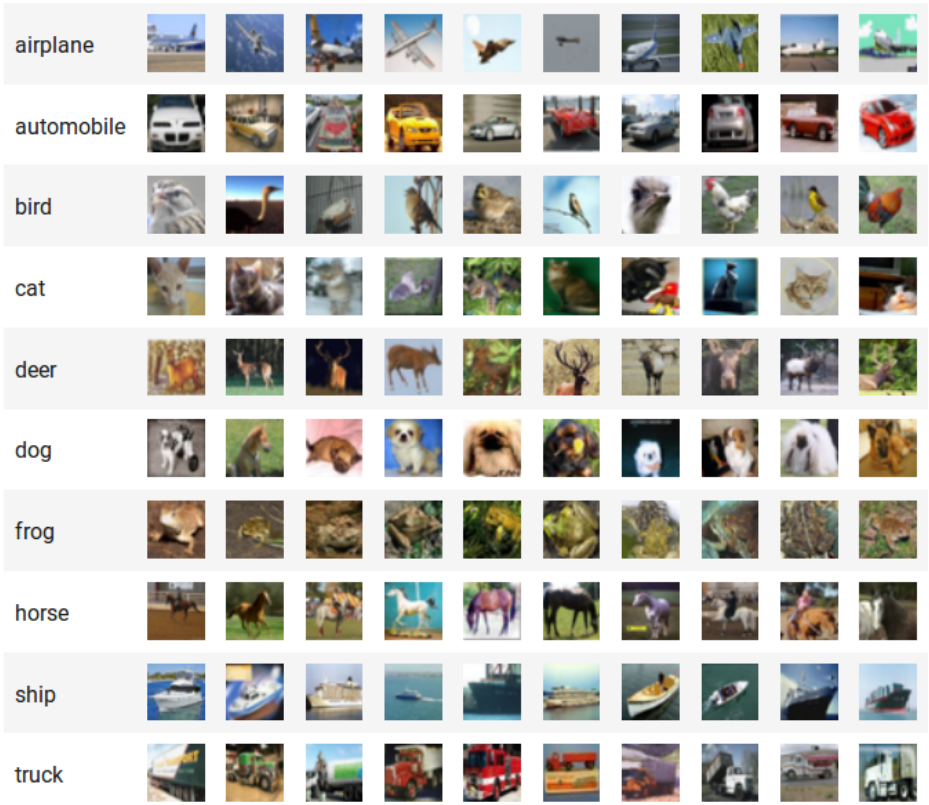
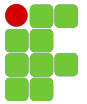


Figure: Example images from the CIFAR-10 dataset.

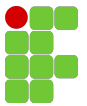
Equations and Codes



Equation Example

Some random equation:

$$\begin{aligned}\frac{\partial}{\partial\theta_k}J(\theta) &= \frac{\partial}{\partial\theta_k}\left[\frac{1}{m}\sum_{k=1}^{m} log(1+e^{-y^{(i)}\theta^T x^{(i)}})\right] \\ &= \frac{1}{m}\sum_{k=1}^{m}\frac{1}{1+e^{-y^{(i)}\theta^T x^{(i)}}}y^{(i)}x_k^{(i)} \\ &= -\frac{1}{m}\sum_{k=1}^{m} h_\theta(-y^{(i)}x^{(i)})y^{(i)}x_k^{(i)}\end{aligned}$$



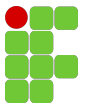
Code Example #1

```
def softmax_loss_naive(W, X, y, reg):
  """
  Softmax loss function, naive implementation (with loops)

  Inputs have dimension D, there are C classes, and we operate on minibatches
  of N examples.

  Inputs:
  - W: A numpy array of shape (D, C) containing weights.
  - X: A numpy array of shape (N, D) containing a minibatch of data.
  - y: A numpy array of shape (N,) containing training labels; y[i] = c means
    that X[i] has label c, where 0 <= c < C.
  - reg: (float) regularization strength

  Returns a tuple of:
  - loss as single float
  - gradient with respect to weights W; an array of same shape as W
  """
```

Carbon

Code Example #2

```
import numpy as np
```

```
1 def code():
2   # test comments #1
3   if True:
4     for _ in range(5):
5       print("Hello World 5 times")
6   return None
```