Deep Learning for Image Analysis
Course Introduction

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About the lecturers

Thomas Walter

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- Researcher on bioimage informatics, director of CBIO
- Main application fields: High Content Screening, as a method to systematically study biological processes by analyzing cellular phenotypes

Santiago Velasco-Forero

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- Researcher on image processing, pattern recognition, multivariate statistics, graph-based data/image analysis
- Main application fields: Remote Sensing, cosmetology, astronomy, hyperspectral imaging.

Etienne Decencière

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- Researcher on image analysis, mathematical morphology, deep learning
- Main application fields: Ophthalmology, dermatology, cosmetology, astronomy

Course organization

- During course sessions: lectures, assignments introduction and correction
- Practical sessions (at home):
  - Python
  - keras, numpy
  - Google colab
- Communication
  - General information available from:
    `http://cours.cmm.mines-paristech.fr`
  - Forum (course and assignment questions): Slack
  - E-mail (absence justification, etc.)
- Grading: written exam (march 17, 9am)

Main notations

i, j, n, p, q	Integer scalars
x, y, z	Real scalars
$\mathbf{x}, \mathbf{y}$	Real vectors
$\mathbf{X}, \mathbf{W}$	Matrices
f, g	Functions
$\boldsymbol{\theta}$	Set of parameters

Bibliography

- Ian Goodfellow and Yoshua Bengio and Aaron Courville, Deep learning, MIT Press.
  `https://www.deeplearningbook.org/`
- Trevor Hastie, Robert Tibshirani, Jerome Friedman, The elements of statistical learning, Springer.
  `https://web.stanford.edu/~hastie/ElemStatLearn/`