



## TRAITEMENT ET ANALYSE DES DONNÉES VISUELLES ET SONORES

### PROCESSING AND ANALYSIS OF VISUAL AND AUDIO DATA

Lecturers: Mohsen ARDABILIAN, Emmanuel DELLANDREA

| Lecturers : 16.0 | TC : 0.0 | PW : 0.0 | Autonomy : 0.0 | Study : 12.0 | Project : 0.0 | Language : MI

#### Objectives

The processing and analysis of visual and audio data are basic approaches in computer vision and audition. Based on Artificial Intelligence techniques, they are developed and applied with the aim of endowing machines with the ability to see, hear and acquire a high level understanding of the content of digital images, sound, and videos. From an engineering perspective, the goal is to automate the tasks that the human visual and auditory system can perform with applications in many fields: Art, Audiovisual, Machine Vision, Autonomous Vehicles, Medicine, Surveillance, Military , etc.

**Keywords :** Image analysis, video analysis, audio analysis, AI, feature, descriptor, shape, color, texture, classification, recognition, fusion, image processing, super resolution, Big Data

#### Programme

Content-based image and/or sound retrieval  
Assessment of image and sound analysis, and processing approaches  
Image processing algorithms, super resolution  
Audio processing algorithms  
End-to-end image and sound analysis algorithms

#### Learning outcomes

- To be able to apply the appropriate processing algorithms to a given context
- To be able to apply the appropriate analysis algorithms to a given context
- Evaluate algorithms or processing and analysis systems
- Know the state-of-the-art processing and analysis algorithms, as well as their principles

#### Independent study

Objectifs :

Méthodes :

#### Core texts

R. Szeliski, *COMPUTER VISION -- ALGORITHMS AND APPLICATIONS*, Springer, 2010  
A. Divakaran *MULTIMEDIA CONTENT ANALYSIS: THEORY AND APPLICATIONS*, Springer, 2008  
R. O. Duda, P. E. Hart & D. G. Stork *PATTERN CLASSIFICATION*, Wiley Interscience, 2004

#### Assessment

Final mark = 60% Knowledge + 40% Know-how  
Knowledge N1 = final exam  
Know-how N2 = continuous assessment