

Organisation: *Face to face: 33 hours* *Homework: 33 hours* *total load: 66 h*

Objectives:

- To acquire a global systemic view of automatic data processing, across the different steps composing any real operational system: data acquisition via sensors, data pre-processing, feature extraction, data modeling, match of sensed data to reference data stored in a large database, use of decision parameters for data final classification;
- To apprehend the systemic vision regarding adverse conditions in case of real operational use of a system: system robustness to noise, system robustness to attacks, system time response, system reliability;
- To apprehend the systemic vision for access control and its security (Smart card, centralized servers, transactions security, biometric data protection);
- To know the main applications of concepts and tools of Pattern Recognition, Multimedia Signal acquisition, Multimodal Fusion and Decision assistance;
- To acquire knowledge of the industrial actors who develop these techniques in the frame of their professional applications or their mass-market products;
- To measure the benefits and limits of these techniques through their current industrial applications;
- To know end-user needs and constraints (e-government, public organizations, hospitals, etc.) interested by future application of these systems, but also their current solutions.

Keywords:

Operational system, Signal processing, Image processing, Pattern Recognition, Global Systemic Approach, Embedded processing, Security, Systems Robustness.

Prerequisites:

- Pattern recognition techniques, knowledge in signal and image processing.

Program:

- Presentations performed by Industrial actors particularly in the areas of Biometrics, Telemedicine, Data Security and Neuroscience.
- Conferences on current applications in such areas by End-users, public or private Organizations (Governments, Airports among others) and Hospitals (AP-HP, SAMU-92, CHU-Toulouse...).
- Introduction to market trends concerning these ICT applications in the areas of security and Telemedicine.
- Ethical and legal aspects: International and European legislations (personal data protection).

Content:--

Evaluation: Grading is as follows

Mark 1 = written evaluation

Mark 2 = oral presentation

Final mark = 50 % Mark 1 + 50 % Mark 2

Lecturers:

Nesma Houmani, various guest lecturers

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