Faculty of Medecine

SBIM2243   Digital processing of medical images

[30h+15h exercises] 4 credits

Teacher(s):   Benoît Macq, Claude Veraart
Language: French
Level: Second cycle

Aims

This class is devoted to the methods of medical images quantitative analysis. The theory is illustrated with exercices and demonstrations including examples of anatomical and functional medical images processing.

Main themes

A) Extension of the signal notion to images - Basics on main medical imagers - Main features of medical images B) Introduction to medical images processing - Filtering methods - Basics on mathematical morphology - Analysis and segmentation C) Viewing algorithms - Surfaces viewing - Volumes viewing - Animation D) Implementation - Introduction to coding and transmission - Software integration E) Applications - 2D imagery - 3D imagery.

Content and teaching methods

Basics on main medical imagers. Notion of signal; extension to images. Main features of medical images. Introduction to medical images processing. Filtering methods. Basics on mathematical morphology. Analysis and segmentation. Viewing algorithms. Surfaces viewing. Volumes viewing. Animation. Implementation. Introduction to coding and transmission. Software integration. Applications. 2D imagery. 3D imagery.

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Prerequisite: a signal processing class (e.g.: SBIM 2241 Biomedical signals acquisition and processing). As indicated, basics on main medical imagers (e.g.: INIS 2103 Medical imaging) will be briefly recalled in the introduction.
Oral examination

Programmes in which this activity is taught

ESP3DS/DM   Diplôme d'études spécialisées en santé publique (gestion des données médicales)
NUT2   Licence en sciences biomédicales (nutrition humaine)
SBIM3DS   Diplôme d'études spécialisées en sciences biomédicales

Other credits in programs

ELEC22	Deuxième année du programme conduisant au grade d'ingénieur civil électricien	(4 credits)
ELEC23	Troisième année du programme conduisant au grade d'ingénieur civil électricien	(4 credits)
ELME23/M	Troisième année du programme conduisant au grade d'ingénieur civil électro-mécanicien (mécatronique)	(4 credits)
FSA3DS/EL	Diplôme d'études spécialisées en sciences appliquées (électricité)	(4 credits)
MAP23	Troisième année du programme conduisant au grade d'ingénieur civil en mathématiques appliquées	(4 credits)
MD3DA/BI	Diplôme d'études approfondies en sciences de la santé (sciences biomédicales)	Mandatory