MSc internship – Engineering school internship

Information theory – Volumetric data – Texture

Internship code: Ent3D-20-21-3

We have developed, at the LARIS laboratory (University of Angers, France) together with the University of Coimbra (Portugal), an innovative algorithm for the extraction of texture features for volumetric data [1]. This algorithm is based on an entropy method issued from information theory. The results given by this algorithm are very encouraging, among others for medical images.

Based on information theory concept, the objective of the internship will be to design other texture feature extraction algorithms for volumes (3D data) using other entropy-based measures. The trainee will have to analyze the sensitivity of his/her algorithms to parameters and validate the algorithms' behavior with several tests. A comparison of the features obtained by the trainee's algorithms with those obtained by the already-existing algorithms will be performed [2]. The trainee will also have to establish a synthesis of the advantages and disadvantages obtained for each algorithm and volume type.

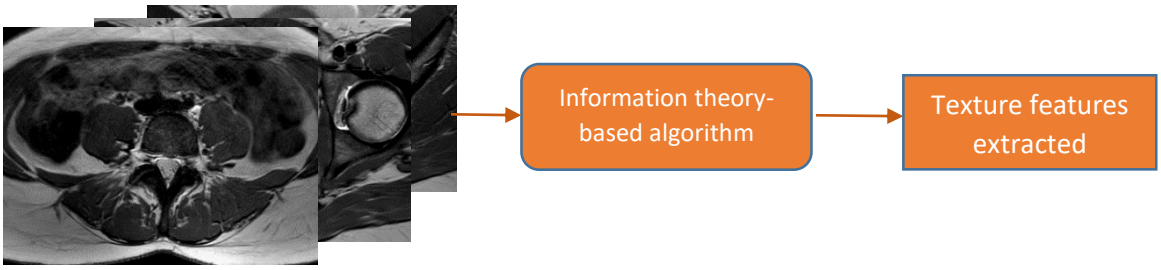
The internship will take place at the LARIS laboratory (University of Angers, France).

Contact: Anne Heurtier (anne.heurtier@univ-angers.fr)

Bibliography:

[1] Gaudêncio, A. S. F., Vaz, P. G., Hilal, M., Cardoso, J. M., Mahé, G., Lederlin, M., & Humeau-Heurtier, A. (2020). Three-dimensional Multiscale Fuzzy Entropy: Validation and Application to Idiopathic Pulmonary Fibrosis. IEEE Journal of Biomedical and Health Informatics, in press.

[2] Humeau-Heurtier, A. (2019). Texture feature extraction methods: A survey. IEEE Access, 7, 8975-9000.



Volumetric data

Texture feature extraction procedure