EANM´18
WORLD LEADING MEETING

Annual Congress of the
European Association of Nuclear Medicine

October 13 – 17, 2018
Düsseldorf, Germany

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Pre-Congress Symposium 4 (Physics / AAPM)
Saturday, October 13, 09:00-12:00

Session Title
Radiomics - Image Derived Parameters in Multimodality Imaging

Chairpersons
Dimitris Visvikis (Brest)
Issam El Naqa (AAPM, Michigan)

Programme

09:00 - 09:30	Mathieu Hatt (Brest): Basic Principles of Radiomics in Multimodality Imaging
09:30 - 09:35	Discussion
09:35 - 10:10	Alexander Zwanenburg (Dresden): Radiomics - Robustness, Reproducibility, Standardisation
10:10 - 10:15	Discussion
10:15 - 10:45	**Coffee Break**
10:45 - 11:20	Issam El Naqa (AAPM, Michigan): Radiomics Based Multi-Parametric Modeling - The Role of Data Mining / Machine Learning
11:20 - 11:25	Discussion
11:25 - 11:55	Catherine Cheze Le Rest (Poitiers): Potential Role of Radiomics in Clinical Multimodality Imaging Based Research
11:55 - 12:00	Discussion

Educational Objectives
1. Learn the basics of radiomics' concept in multimodality imaging
2. Discuss current trends in standardization and harmonization of radiomics calculation
3. Learn about statistical analysis and machine learning approaches in the construction of multi-parametric models using radiomics for patient stratification
4. Summarize the potential clinical research applications of radiomics

Summary
Radiomics represents the field of large scale image derived parameters for the characterisation of disease and patient management. Patient stratification, treatment personalisation and response monitoring are key applications of multimodality imaging. Current clinical practice involves the integration of simple image semi-quantitative measures, such as in the case of PET/CT, the maximum standardized uptake value corresponding to the normalized highest activity pixel value (SUVmax) within a region of interest around the tumor, and/or the tumor functional and anatomical volumes. These parameters represent global tumor characterisics and hence cannot capture the complete spectrum of information that can be extracted from acquired multimodality images. The hypothesis can be made that characterizing tumor anatomical and functional heterogeneity in a global, regional, and/or local fashion using radiomics may be related to underlying tumor biological/genetic characteristics and associated heterogeneity. Although starting earlier in the field of anatomical imaging the field of radiomics has over the last few years witnessed an enormous growth in PET imaging and more recently in multimodality imaging such as PET/CT. The objectives of this pre-congress symposium include (i). the understanding of the basics of radiomics in multimodality imaging, the need for standardisation in the way such parameters are obtained and finally their exploitation in the construction of multi-parametric predictive and prognostic models and clinical research.