

Joint Symposium 6

Radiation Protection Committee / European Alliance for Medical Radiation Protection Research

([EURAMED](#))

Tuesday, June 28, 2022 / 12:00-13:30 / Channel 4

Session Title

Artificial Intelligence and NM - Clinical Impact and Impact on Radiation Protection

Chairperson

Klaus Bacher (Ghent, Belgium)

Programme

12:00 - 12:29 **Christoph Hoeschen** (Magdeburg, Germany / EURAMED): Recent Advances in Machine Learning and its Impact in Patient Management

12:29 - 12:58 **Irène Buvat** (Orsay, France): The Use of Radiomics - What is it and How it Works

12:58 - 13:27 **Habib Zaidi** (Geneve, Switzerland): The Emerging Role of Artificial Intelligence in Reducing Radiation Exposure

13:27 - 13:30 Session Summary by Chairperson

Educational Objectives

1. Understand the basics of AI application in medical imaging
2. Describe how AI may improve patient management by contributing to precision medicine
3. Understand what Radiomics is and the difference between Radiomics and Artificial Intelligence in Nuclear Medicine
4. Become familiar with the main concepts and good practice for performing radiomic studies.
5. Understand how the use of AI algorithms may contribute to lower radiation exposure in Nuclear Medicine
6. Gain insight on how AI will expand in the medical imaging arena

Summary

Although Artificial Intelligence (AI) is not something new to Nuclear Medicine, the recent advances in the field and particularly, deep learning algorithms, have re-ignited the excitement in the field. While AI has made it possible to analyse vast amounts of data and extract quantitative metrics (radiomics), its use requires thorough validation before applying it to medical practice. AI that has been shown to be a useful tool not only in diagnostic applications by improving lesion detection and characterization, but also in therapeutics, by tailoring the amount of radiation required to be delivered to treat a defined tumour volume. AI has also been shown to predict the treatment response and survival, allowing a personalized approach to the patient and a better allocation of resources, which ultimately is beneficial to the entire society. The further development and application of AI to NM practice will require the adoption of strict protocols regarding image acquisition and image reconstruction.

Key word

Artificial Intelligence, Radiomics, Machine Learning, Metabolic Rate, Dose Reduction