The Abdus Salam International Centre for Theoretical Physics

IAEA International Atomic Energy Agency

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Joint ICTP-IAEA Workshop on Clinical Implementation of Imaging-based AI Systems for Medical Physicists

DESCRIPTION:

The workshop is designed for medical physicists interested in expanding their knowledge and skills in the clinical implementation of imaging-based AI systems. By combining theoretical principles with hands-on practical examples, it offers a contemporary overview and practical tools for safe and effective implementation.

MORE INFORMATION:

The deployment of technologies based on artificial intelligence (AI) in medical physics and in the medical use of ionizing radiation - namely radiation oncology, diagnostic imaging and nuclear medicine - is rapidly increasing. Medical physicists are expected to play a key role in ensuring safe and effective clinical implementation of AI based tools.

This comprehensive workshop will provide participants with a theoretical foundation in the most important areas of imaging-based AI systems relevant to medical physics. The workshop will introduce medical physicists to examples of imaging-based AI systems, along with relevent aspects of their clinical implementation, including technical, ethical, and legal challenges related to the implementation process. These aspects should be carefully considered to ensure that quality of patient care and patient safety are not compromised.

Hands-on training focused on implementation, risk mitigation, and quality assurance of imaging-based AI systems will be provided to strengthen participants' practical skills.

TOPICS:

The Workshop is aimed at providing medical physicists with relevant knowledge to support departments in deploying and using imaging-based AI tools, including:

- Insight into current imaging-based AI tools in radiation medicine (diagnostic radiology, nuclear medicine and radiotherapy imaging workflows);
- Theoretical principles of AI from the user's perspective: foundational statistical concepts, statistical modelling, machine learning, deep learning, radiomics, data management (including feature selection and engineering), model training and validation;
- Roles and responsibilities of clinically qualified medical physicists in imaging-based AI clinical applications;
- Requirements for education and training;
- Implementation considerations: identification of needs, market research, (pre)selection, installation, acceptance and commissioning, introduction to clinical settings, quality assurance, clinical evaluation and decommissioning;
- Regulatory and ethical aspects;
- Hands-on training.

LECTURER:

Andreas Dekker
Maastricht University, Medical Center and Maastro Clinic, Kingdom of the Netherlands

PREREQUISITES:

The target audience are early and mid-career clinically qualified medical physicists (CQMPs, as per IAEA Publication Human Health Series No. 25) from United Nations, UNESCO or IAEA Member States holding a postgraduate-level university degree in medical physics and working in hospitals in either in radiotherapy, nuclear medicine or diagnostic radiology. Although the workshop is not intended for developers of AI-based tools, basic computational programming, data management and fundamental statistics skills are considered as assets.

16 - 20 November 2026

Trieste, Italy

Applications and Deadlines:

Requesting financial and/or visa support
1 May 2026

For other participation
1 August 2026

DIRECTORs:

Egor Titovich, IAEA, Austria
Olivera Ciraj Bjelac, IAEA, Austria

LOCAL ORGANIZER:

Marco Esposito, ICTP, Italy

FURTHER INFORMATION:

E-mail: smr4246@ictp.it

Web: https://indico.ictp.it/event/11172/

Female scientists are encouraged to apply.

GRANTS:

A limited number of grants are available to support the attendance of selected participants, with priority given to participants from developing countries.
There is no registration fee.

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