

## 4th Jagiellonian Symposium on Advances in Particle Physics and Medicine



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### Key talk: Artificial intelligence in cardiovascular Imaging

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Cardiovascular imaging has been experiencing rapid development recently thanks to refinements in imaging technologies and software for image analysis. Recent breakthroughs in data science, machine learning, and artificial intelligence (AI) have been applied broadly to pre- and post-processing of imaging data.

Novel computing approaches hold the promise of improved image quality, automated detection and segmentation of abnormal regions, image registration, and modality-to-modality transformation. There is a wealth of imaging information that offers new opportunities – while this can be automatically extracted from medical images, new methods are required for integrating the diverse data such as multimodal images and electronic health records.

AI may allow meaningful improvements in diagnostic accuracy and quantitative outcome prediction. Interpretable AI systems can explain the primary factors driving the diagnosis or prognosis to both the physician and patient, dispelling the “black-box” perception of AI. I will overview the latest AI developments in cardiovascular imaging, both classical machine learning and deep learning focusing on nuclear medicine and CT, including application in PET imaging. I will also discuss issues related to the validation and deployment of AI systems for medical imaging applications.

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