

## Advancements in ai-driven cardiac diagnostics: Transforming early detection

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Artificial intelligence (AI) has emerged as one of the most transformative tools in cardiovascular medicine, particularly in the early detection and risk stratification of heart diseases. This presentation explores the integration of machine learning algorithms into diagnostic workflows, with a focus on echocardiography, cardiac MRI, and predictive analytics. By analyzing vast datasets, AI systems can identify subtle abnormalities often missed during manual interpretation, allowing clinicians to diagnose conditions such as hypertrophic cardiomyopathy, coronary artery disease, and arrhythmias at earlier stages.

The talk will present real-world case studies where AI-enhanced imaging significantly improved diagnostic speed and accuracy. Emphasis will also be placed on deep-learning models capable of automating measurement processes, reducing inter-observer variability, and enhancing clinical efficiency. In addition, the role of AI in predicting patient outcomes and personalizing treatment plans will be discussed, demonstrating its potential to optimize therapeutic decisions and reduce hospitalizations.

Ethical considerations such as data privacy, algorithm transparency, and clinical responsibility will also be addressed. The presentation aims to highlight both current capabilities and future directions, illustrating how AI can elevate cardiology practice and support physician decision-making. Ultimately, this session will underscore how AI-driven diagnostics are paving a new era in preventive cardiology.

### Biography

Elena Rossi is an Associate Professor of Cardiology at the University of Milan, specializing in cardiovascular imaging and AI-assisted diagnostics. With more than 15 years of clinical and research experience, she has led multiple European multidisciplinary projects focused on machine learning in cardiology. Her work has been widely published in leading journals, and she actively collaborates with international centers to advance digital health technologies. Dr. Rossi is a frequent speaker at global cardiology congresses.

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