

### Transcript Details

This is a transcript of an educational program. Details about the program and additional media formats for the program are accessible by visiting: <https://reachmd.com/programs/project-oncology/the-evolving-ai-landscape-in-nuclear-medicine/24060/>

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## The Evolving AI Landscape in Nuclear Medicine

### Host Intro:

Welcome to *Project Oncology* on ReachMD. On this episode, we'll hear from Dr. Joyita Dutta about her presentation on medical foundation models and AI applications in nuclear medicine at the Society of Nuclear Medicine and Molecular Imaging, or SNMMI, 2024. Dr. Dutta is an Associate Professor at the University of Massachusetts, Amherst in the Department of Biomedical Engineering. Let's hear from her now.

### Dr. Dutta:

I am an electrical engineer by training. I did my PhD work on medical imaging, and since then, I've been working on AI and signal processing techniques applied to different biomedical problems. The session on medical foundation models yesterday at the conference, was really the first of its kind. They were in this packed room with a very engaged audience. It was a wonderful experience.

Foundation models are actually very large AI models that are trained on massive data sets, usually for a wide range of tasks. And these have actually been shown to be easily adaptable to new tasks. So my talk yesterday covered diffusion models for image generation. If you've played around with these new text-to-image generation tools, like OpenAI's Dall-E or Google's Imagen, then you may actually be familiar with the power of these models. So in my talk specifically, I covered the nuts and bolts of how diffusion models work. And I went through a number of different recent applications of these models to medical imaging, in particular, nuclear medicine.

So the AI landscape right now, it's evolving at a really fast pace. AI models are fundamentally very data hungry compared to other imaging modalities, say CT or MRI. We do have a shortage of large public data sets in nuclear medicine that AI models can be trained on, and so that poses a real challenge. And so I think it is urgent that we as a community, as a society, really address this need and curate large data sets that are based on multiple centers' data from different tracers for different clinical tasks. And honestly, that's really the only way to tap the full potential of AI in nuclear medicine.

Usually, the biggest attraction for me at the SNMMI Conference are its Young Investigator Awards session. So I am really looking forward to the YAA session from the Physics Instrumentation and Data Sciences Council. They have a very attractive range of talks covering different topics, including AI, new imaging hardware, and new methods for Theranostics and radiopharmaceutical therapy.

### Host Outro:

That was Dr. Joyita Dutta reviewing her presentation on medical foundation models and AI from SNMMI 2024. To hear this and more episodes in this series, visit Project Oncology on ReachMD.com, where you can Be Part of the Knowledge. Thanks for listening.