

## Keynote Lecture

### AI in Nuclear Safety: Lessons from the Past, Insights for the Future

**Joon-Eon YANG**

Korea Atomic Energy Research Institute, Daejeon, Korea

---

The rise of AlphaGo in 2016 spurred AI-related research around the world. The emergence of large language models such as ChatGPT has further intensified the enthusiasm for AI. Recently, the nuclear community has also been actively conducting AI-related research in various fields, including nuclear safety. International organizations such as the IAEA and OECD/NEA are sponsoring AI-related research, and regulatory agencies such as the NRC have begun preparing AI-related regulations.

A similar AI boom occurred in the 1980s. At that time, the nuclear community was also conducting a lot of AI-related research, including in the field of PSA. However, after the second AI winter in the 1990s, much of the AI research faded away.

Will the latest AI-related research be a game changer for nuclear safety, or will it fade away again like it did a few decades ago? It's worth taking a look back at the second AI boom to see what AI-related research activity was going on in the nuclear safety area and why it faded away. Have we solved the problems that nuclear AI research did not solve back then? In this keynote, I will examine the characteristics and problems of AI research in the 1980s and 1990s, and what lessons we can learn from them. Looking at the problems and the current status will help us to set the direction of AI research in nuclear safety in the future.