

Nuclear Power Plant's Accident Scenario Identification through Artificial Intelligence Application: An Overview

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Nuclear energy has long been recognized as a low-carbon emission technology. However, the widespread adoption of nuclear power plants (NPPs) is hindered by the complexity of their man-machine-network integration systems, the occurrence of various faults, insufficient automation, and the challenges faced by human operators. In recent years, the development and utilization of artificial intelligence (AI) technology has presented both prospects and complexities in enhancing the functionality and security of nuclear reactors. This exponential growth of AI offers novel avenues to optimize the operation and ensure the safety of nuclear reactors. Artificial intelligence (AI) technologies have the potential to address the limitations and enhance the functionality of NPPs. In this review different AI techniques are investigated which can contribute to NPPs Accident Scenario Identification. By exploring the applications of AI in this context, we shed light on the potential benefits and advancements that can be achieved by integrating AI technologies into nuclear energy systems.

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