

عنوان مقاله:

AI-Driven Solutions for Climate Resilience: Optimizing Resource Use and Informing Decision-Making in a Changing World

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نویسندگان:

.Seyed Reza Samaei - Post-doctoral, Lecturer of Technical and Engineering Faculty, Science and Research Branch, Islamic Azad University, Tehran, Iran

.Elham Behdadfar - Bachelor's degree graduate, primary education field, The department of education region ۹, education of Tehran, Iran

خلاصه مقاله:

Climate change poses one of the most pressing challenges of our time, with far-reaching impacts on ecosystems, economies, and societies worldwide. Addressing this complex issue requires innovative solutions that harness the power of artificial intelligence (AI) to inform decision-making, optimize resource use, and enhance resilience to climate impacts. This paper presents a comprehensive framework for leveraging AI in climate change mitigation and adaptation efforts, encompassing key areas such as climate modeling, renewable energy optimization, carbon capture and storage, smart agriculture, climate risk assessment, natural resource management, climate finance, and policy support. We discuss effective and usable AI algorithms tailored to each solution area, including deep learning for climate modeling, reinforcement learning for renewable energy optimization, generative adversarial networks for carbon capture and storage, random forests for smart agriculture, Bayesian networks for climate risk assessment, convolutional neural networks for natural resource monitoring, graph neural networks for climate finance, and simulation and optimization algorithms for policy support. By integrating these AI-driven approaches into climate action strategies, policymakers, researchers, and practitioners can develop more informed, efficient, and impactful responses to climate change, ultimately contributing to a sustainable and resilient future for generations to come.

کلمات کلیدی:

.AI-driven, Climate resilience, Resource optimization, Decision-making, Changing world :

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