

عنوان مقاله:

AI Applications in Firefighting and Analysis of Urban and Rural Fire Outcomes

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خلاصه مقاله:

Firefighting is a crucial service dedicated to protecting lives, properties, and the environment from fire-related disasters. Traditional firefighting methods face significant challenges, including response times, resource allocation, and safety, particularly in complex urban environments and vast rural areas. The advent of Artificial Intelligence (AI) offers transformative opportunities to enhance firefighting capabilities. This paper explores the application of AI in firefighting, emphasizing its impact on urban and rural fire incidents. AI-driven predictive analytics forecast fire outbreaks by analyzing weather conditions, vegetation status, and historical data, improving preparedness and resource allocation. Real-time data analysis from IoT sensors, drones, and satellite imagery provides comprehensive insights into fire behavior and progression, facilitating informed decision-making[1]. AI-powered drones and robots assist in monitoring, delivering supplies, and directly combating fires in hazardous areas, significantly improving safety and efficiency. Decision support systems enhance strategic planning and optimize firefighting efforts, ensuring effective resource deployment. The integration of AI in firefighting demonstrates tangible benefits, including enhanced safety, improved efficiency, and reduced environmental impact. Despite challenges such as technological barriers, data privacy concerns, and substantial financial investments, the potential of AI in revolutionizing firefighting is immense. This paper highlights the importance of continued advancements, comprehensive policies, and collaborative efforts to fully leverage AI's capabilities in fire management. Through AI, the future of firefighting promises more effective fire management, reduced risks to human life, and minimized environmental impact in both urban and rural settings.

کلمات کلیدی:

Artificial Intelligence, Firefighting, Urban Fire, Rural Fire

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