



A CRITICAL STUDY ON USE OF TECHNOLOGY IN DISASTER MANAGEMENT

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Abstract:

The pivotal role of technology in modern disaster management strategies, emphasizing its multifaceted contributions to preparedness, response, and recovery phases. In the face of escalating natural and man-made disasters, technological advancements have become indispensable tools for enhancing situational awareness, communication, and decision-making processes. This paper explores the diverse applications of technology, including satellite imagery, geographical information systems (GIS), unmanned aerial vehicles (UAVs), and sensor networks, in the early detection and monitoring of disasters. Additionally, it delves into the pivotal role of communication technologies and social media platforms in facilitating real-time information dissemination, mobilizing resources, and coordinating emergency responses. Furthermore, the abstract underscores the significance of data analytics and artificial intelligence in predicting disaster trends, optimizing resource allocation, and improving the overall efficacy of disaster management efforts. Ultimately, this abstract serves as a concise overview of the critical role technology plays in fortifying our collective resilience against the increasing frequency and intensity of disasters in the contemporary world.

Keywords:Disasters, Technology, Disaster Management, Disruptive Technologies.

Introduction

In recent years, the integration of technology in disaster management has become increasingly vital in mitigating the impact of natural and man-made disasters. The dynamic nature of disasters demands innovative solutions, and technology plays a crucial role in enhancing

preparedness, response, recovery, and resilience. From early warning systems to data analytics, the use of technology has revolutionized the way we approach disaster management.

1. Early Warning Systems:

Technology has significantly improved early warning systems, providing timely and accurate information to communities at risk.



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Advanced sensors, satellite imaging, and weather forecasting tools enable authorities to monitor environmental conditions and predict potential disasters. For instance, seismic sensors can detect earthquakes in real-time, triggering automated alerts that help people evacuate to safer locations.

2. Geographic Information Systems (GIS):

GIS technology allows for the efficient mapping and analysis of disaster-prone areas. By integrating spatial data, authorities can create detailed maps that highlight vulnerable regions, evacuation routes, and resource distribution centers.



Geographic Information Systems (GIS)

GIS aids in effective decision-making by providing a visual representation of the affected areas, helping responders allocate resources more strategically.

3. Communication Technologies:

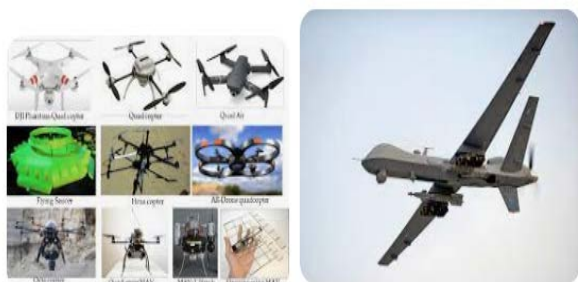
Rapid communication is crucial during disasters. Mobile phones, social media, and communication apps facilitate quick dissemination of information to the public.



Emergency alert systems can send text messages, push notifications, and broadcast warnings, ensuring that individuals receive timely updates on evacuation orders, weather conditions, and other critical information.

4. Drones and Unmanned Aerial Vehicles (UAVs):

Drones have proven invaluable in disaster response efforts. They can be deployed to assess the extent of damage, locate survivors in hard-to-reach areas, and deliver medical supplies or other essentials.



UAVs equipped with cameras and sensors provide real-time data, aiding emergency responders in making informed decisions.

5. Big Data and Analytics:

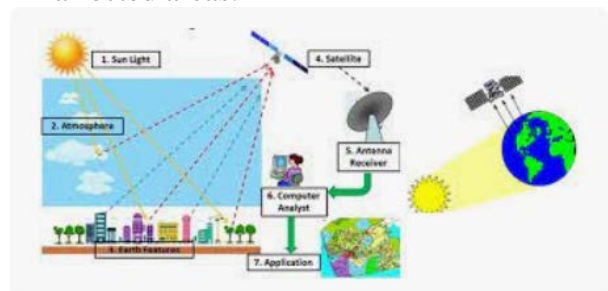
The analysis of large datasets can offer valuable insights for disaster management.



Big data analytics help predict disaster patterns, assess vulnerabilities, and optimize resource allocation. Machine learning algorithms can process vast amounts of information to identify trends, enabling authorities to develop more effective strategies for disaster preparedness and response.

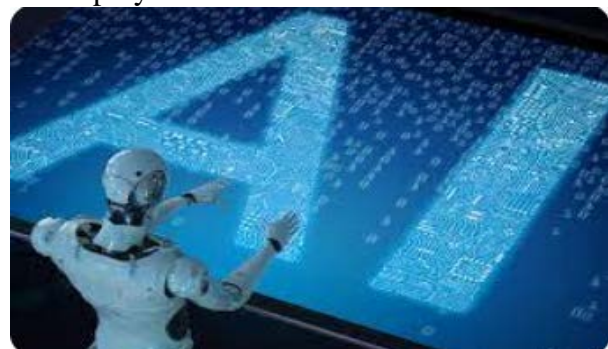
6. Remote Sensing Technology: Satellites

equipped with remote sensing technology provide a comprehensive view of disaster-affected areas.



This technology helps monitor changes in terrain, assess damage, and plan for recovery efforts. Remote sensing is particularly useful in large-scale disasters, such as hurricanes, floods, or wildfires.

7. Robotic Technology: Robots and autonomous systems are increasingly being employed in disaster scenarios.



These technologies can be used for search and rescue operations, reconnaissance in hazardous environments, and the handling of dangerous materials. Robots equipped with sensors and cameras can navigate disaster-stricken areas, providing critical information to human responders.

The use of technology in disaster management has ushered in a new era of preparedness and response capabilities. As innovation continues to advance, the integration of cutting-edge technologies will play a pivotal role in minimizing the impact of disasters and safeguarding communities worldwide.

SUMMARY

Utilization of technology in disaster management has emerged as a critical aspect of enhancing preparedness, response, and recovery efforts. Various technological tools and innovations play pivotal roles in mitigating the impact of disasters. Geographic Information Systems (GIS) enable precise mapping of affected areas, facilitating efficient resource allocation and rescue operations. Remote sensing technologies, including satellite imagery and drones, provide real-time data for assessing the extent of damage and monitoring disaster evolution. Early warning systems leverage advanced communication technologies to disseminate timely alerts to at-risk populations, enabling them to evacuate or take necessary precautions. Social media platforms serve as effective channels for information dissemination, fostering community engagement and coordination during crises. Additionally, data analytics and artificial intelligence contribute to predictive modeling, aiding in forecasting potential disasters and optimizing response strategies. The integration of these technologies not only improves the speed and accuracy of disaster management but also enhances the overall resilience of communities in the face of unforeseen challenges.

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