

Toward an integrated disaster management approach: How artificial intelligence can boost disaster management

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Abstract

Technical and methodological enhancement of hazards and disaster research is identified as a critical question in disaster management. Artificial intelligence (AI) applications, such as tracking and mapping, geospatial analysis, remote sensing techniques, robotics, drone technology, machine learning, telecom and network services, accident and hot spot analysis, smart city urban planning, transportation planning, and environmental impact analysis, are the technological components of societal change, having significant implications for research on the societal response to hazards and disasters. Social science researchers have used various technologies and methods to examine hazards and disasters through disciplinary, multidisciplinary, and interdisciplinary lenses. They have employed both quantitative and qualitative data collection and data analysis strategies. This study provides an overview of the current applications of AI in disaster management during its four phases and how AI is vital to all disaster management phases, leading to a faster, more concise, equipped response. Integrating a geographic information system (GIS) and remote sensing (RS) into disaster management enables higher planning, analysis, situational awareness, and recovery operations. GIS and RS are commonly recognized as key support tools for disaster management. Visualization capabilities, satellite images, and artificial intelligence analysis can assist governments in making quick decisions after natural disasters. © 2021 by the authors. Licensee MDPI, Basel, Switzerland.

Author keywords

Artificial intelligence; Disaster management; Geographic information system