

138

## **GeoAI for Mapping Destruction by War in Gaza Strip**

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### **Abstract**

Geographical artificial intelligence (GeoAI) combines artificial intelligence (AI) with geographical data, science, and technology to provide real-time comprehension and prediction capabilities required for navigating difficult settings. It enables proactive decision-making in a variety of industries by automating difficult analytical procedures, significantly enhancing data quality, and increasing situational awareness.

GeoAI is very beneficial during battle. It greatly improves military intelligence, increasing activity-based intelligence and allowing operations at the "speed of conflict" by swiftly extracting critical information, discovering complicated patterns, and detecting changes in large datasets. GeoAI also improves logistics and supply chains in large-scale military operations by precisely estimating demand and enabling the self-transport of critical goods in dangerous regions, lowering the risk to human life.

With 1.7 million people (75% of the population) internally displaced and 69% of structures destroyed or damaged, Gaza faces enormous post-conflict reconstruction challenges that GeoAI can help with. By fusing computer vision and sophisticated remote sensing (satellite, drone photography, LiDAR), it enhances damage assessment. In comparison to conventional, time-consuming manual procedures, this greatly improves speed and accuracy (e.g., 95% accuracy in other cases) by automating the precise identification and severity evaluation of damaged structures. Successful emergency responses and more effective resource allocation are made possible by this prompt comprehension. In addition to assessment, GeoAI helps to resolve imbalances in important social services, maps displaced people accurately, optimizes logistics for rebuilding materials, and encourages informed urban design through comprehensive digital twins, allowing for a data-driven and coordinated recovery.