Enhancing Object Geolocations in Imagery to Improve Disaster Damage Mapping and Assessment

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Community-driven and field survey photos/videos are critical for communicating disaster impacts, offering valuable data on damage levels, locations, and extent. This is especially significant for rural and suburban communities that often lack the infrastructure and resources for effective disaster monitoring and documentation. Photos collected from these communities can be essential for updating outdated damage maps and improving disaster preparedness and response. This study focuses on developing an algorithm to enhance the calibration of object geolocations in disaster-related imagery, aiming to improve overall disaster impact assessment accuracy and validate damage predictions. The proposed algorithm addresses limitations in current systems by refining geolocation precision, which is critical for generating accurate damage maps and assessments across various types of disasters (e.g., flood/tornado mapping). By advancing geolocation accuracy, the algorithm will support communities in creating detailed and reliable damage maps. It will also improve disaster response and recovery efforts by enabling more precise targeting of interventions and more efficient resource allocation.