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Automating Hazard-Specific Ontology Construction: Methodological Advancements Using Ontology Learning Techniques

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System for Ontology Learning and Extraction (SOLE) aims to automate hazard-specific ontology construction from knowledge bases of disaster-related information (e.g., scholarly articles) through the use of ontology learning techniques. The hazard-specific ontologies that are extracted from knowledge bases of disaster-related information will provide planners, policymakers, and decision-makers with the information they need in cases of disaster. This research will contribute by enabling the automated extraction and organization of unstructured data into structured data and information related to a crisis resulting from specific hazards. The proposed system, SOLE can be used to process real-time data from social media to uncover the effects of disasters in different locations, thereby improving critical disaster relief efforts. Also, this research will identify place and hazard-specific impacts by integrating formal and informal terms. Such information can provide critical intelligence for improving disaster planning, recovery, and resilience efforts. SOLE contains two components, which are the Ontology Learning System (OLS) and Semantic Mapping System (SMS). The paper focuses only on the first component.

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