

Where is Western New York? An Ontology-based Modeling of Vague Places using Social Media Data

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Vague places are places that lack a certain and unambiguous boundary to their spatial regions. People's perception of vague places' spatial extent is often subjective and is based on their experience and understanding of the geographic context. Such subjective understandings of places might cause ambiguities and inefficiencies when communicating and sharing geographic information, especially between human and computational systems. This paper aims to 1) model the vague place of Western New York (WNY) using social media data and 2) understand the vagueness associated with such places from an ontological perspective. Social media (e.g., Twitter/X) users' posts were acquired to investigate people's perceptions of the spatial extent of WNY. The eastern boundary of the WNY region is then modeled using spatial clustering algorithms (e.g., DBSCAN) and compared with various present institutional definitions of the WNY region and with the historical delineation of the region. The result shows that WNY's eastern boundary moved eastward compared to its original location when the state acquired the region. Some current definitions of WNY (e.g., from social and governmental agencies) need revision to be more consistent with the general public's understanding of the space. Lastly, the vagueness associated with places such as WNY is discussed and addressed in the context of Basic Formal Ontology (BFO) to bring insights into the issue from a philosophical perspective.

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