Public Abstract

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Enormous amounts of high-resolution commercial satellite imagery--such as what can be currently found in GoogleEarth--is being collected annually. Geographers and other users of such imagery are frequently faced with a situation where they have an area of interest but would like to find similar content elsewhere in an archive of imagery. To this end we have constructed the Geospatial Information Retrieval and Indexing System (GeoIRIS) content-based retrieval system which: (1) breaks an image down into constituent parts (i.e. color, roads, buildings, etc.) and indexes values from each feature space in a database; (2) facilitates query-by-example searches that aggregate results from queries of each feature space; (3) allows for queries to be performed for multiple objects at a time, including information about the spatial relationships of objects; and (4) intelligently summarizes results by geospatially clustering search results for efficient interrogation. Our research allows for large databases of satellite imagery to be searched across multiple feature spaces very efficiently. This work demonstrates the first attempt to produce a prototype system that is capable of performing complex content-based retrieval for high-resolution satellite and aerial imagery.