

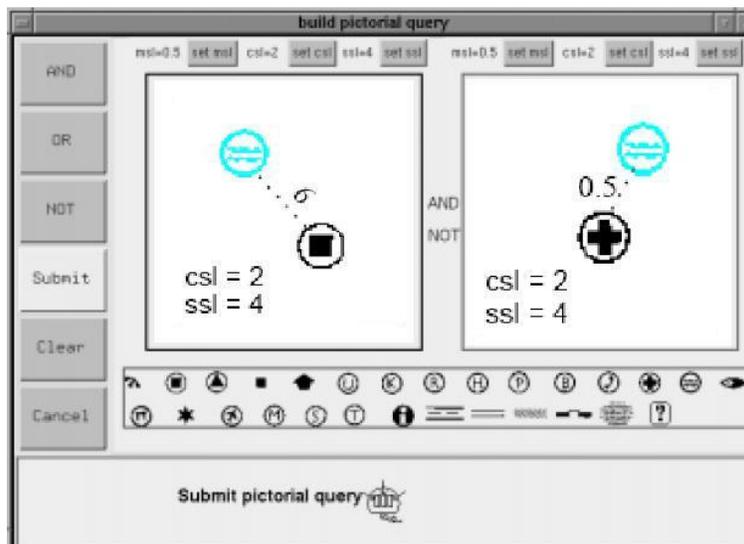
# Pictorial Query Specification and Position-independent Indexing to Support Browsing through Spatially-referenced Image Databases

## Researchers

- **University of Maryland**
  - **Hanan Samet**
  - **Charles B. Cranston**
  - **Andre Folkers**
  - **Aya Soffer**

Supported in part by the National Science Foundation

A pictorial query specification technique that enables the formulation of complex pictorial queries for browsing through a collection of spatially referenced images has been developed. It is distinguished from most other methods by the fact that in these methods the query image specifies a target database image in its entirety whereas in the presented method the query image specifies the combination of objects that the target database image should contain rather than being treated as a whole image. Moreover, it is possible to specify the minimum required certainty of matching between query-image objects and database-image objects, as well as to impose spatial constraints that specify bounds on the distance between objects and the relative direction between them. Each pictorial query is composed of one or more query images. Each query image is constructed by selecting the required query objects and positioning them according to the desired spatial configuration. Boolean combinations of two or more query images are also possible by use of AND and OR operators. A query image may be negated in order to specify conditions that should not be satisfied by the database images that are retrieved successfully. Retrieval of matching instances requires the development of spatial indexing methods that are position-independent and possibly orientation-independent. Such methods depend on being able to identify all of the possible configurations of  $n$  objects which become combinatorially large as  $n$  increases.



Display all images with a hotel  
 within 6 miles of a beach  
 and with no first aid  
 station within 0.5 mile of  
 the beach .

<http://www.cs.umd.edu/~hjs/pubs/soffervlc.pdf>

Pictorial query specification for browsing through spatially-referenced image databases

<http://www.cs.umd.edu/~hjs/pubs/icpr02-folkers-paper.pdf>

Content-based image retrieval using Fourier descriptors on a logo database

<http://www.cs.umd.edu/~hjs/pubs/zben-pos-independent.pdf>

Efficient position-independent iconic search using an r-theta index.