Abstract:
Many applications depend on a database of objects that are located in multidimensional space. For example, MapQuest (http://www.mapquest.ca) retrieves streets, municipalities and roads located in a specific geographical region. An important problem in multidimensional (i.e. spatial) databases is efficient search and retrieval using a spatial access method (i.e. spatial index). Many proposed SAMs are based on the B-tree. Their common limitation is their inability to preserve spatial relationships between all objects (for example, object 1 is located northeast of object 2). A hierarchical spatial access method called the 2DR-tree is proposed that preserves all spatial relationships between all objects in 2-dimensional space. The 2DR-tree fits the existing data by using nodes that are the same dimensionality. Objects in each node are organized according to a "validity rule" that preserves spatial relationships. This provides support for both binary searching that takes advantage of spatial relationships, and greedy searching that reduces the number of objects within a node that must be tested. Node validity, insertion, deletion and search strategies will be presented. Results of a performance evaluation and future research directions will be presented.

About the Speaker:
Wendy Osborn obtained her B.C.S.(Honours) and M.Sc. degrees from the University of Windsor in 1996 and 1998, respectively. She is pursuing her Ph.D. at the University of Calgary, and will be defending her thesis on September 27th, 2004.