

Bibliography on Spatiotemporal Databases

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Spatial and temporal databases are important and well-established sub-disciplines of database research. Some 350 papers in temporal databases have appeared, authored by almost 300 researchers. The literature on spatial databases is also substantial; the bibliography of Samet's landmark books on spatial data structure list 823 references (*The Design and Analysis of Spatial Data Structures*, and *Applications of Spatial Data Structures*, 1990, Reading Massachusetts: Addison-Wesley).

Only recently have issues concerning the simultaneous support of both space and time in databases been considered. While this new area of research was presaged by Thrift's observation in 1977 that time could be considered an additional dimension in a two or three dimensional space (Thrift 1977), little was done until Nikos Lorentzos' and Gail Langran's doctoral dissertations (Langran 1989a, Lorentzos 1988). Several more dissertations have followed (Al-Taha 1992, Frazier 1993b, Hazelton 1991b, Kelmelis 1991, Kolovson 1990, Li 1992, Miller 1991b, Sandhu 1990), and in September, 1992 the first conference was devoted to the topic (Frank et al. 1992). (This conference was preceded by a small workshop described in Barrera et al. 1991). The first book devoted to the topic also appeared recently (Langran 1992d). The NSF-funded National Center for Geographic Information and Analysis (NCGIA) has assigned one of its dozen-odd initiatives to spatiotemporal reasoning. With the rise in interest in scientific databases, such as those supporting satellite sensing, the area of spatiotemporal databases is certain to receive more emphasis in the next few years.

This bibliography lists papers that consider the interaction of spatial and temporal database management system support. For information on the literature of temporal databases, see the most recent bibliography (of four) in the March, 1991 issue of SIGMOD Record. For discussions of the separate research issues of temporal and of spatial databases, see the two articles in the December, 1990 issue of SIGMOD Record. We have attempted to collect here references to all existing literature that simultaneously consider space and time.

The bibliographic entries for these references (most including abstracts) in LATEX bibtex format may be acquired via anonymous FTP from cs.arizona.edu in the bib directory in the file spacetime.bib. Corrections and additions would be greatly appreciated, and may be sent to Khaled Al-Taha at the above address.

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