GIS Network Model in Geospatial Analysis

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Abstract

Geographic information systems (GIS) provide both theory and methods that have the potential to facilitate the development of spatial analytical functions and various GIS data models. There are several network models in GIS, such as river networks, utility networks and transportation or road networks. Among these, GIS road network data models are important for solving problems in urban areas such as transportation planning, retail market analysis, accessibility measurements, service allocation and more. Understanding the road network patterns in urban areas is important for human mobility studies, because people are living and moving along the road networks. A network data model allows us to solve daily problems such as finding the shortest path between two locations, looking for the closest facilities within a specific distance or estimating drive times. Although many network models are conceptually simple they are mathematically complex and require computational resources to model the problem.

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