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Dev Oliver

# Spatial Network Data

Concepts and Techniques for Summarization

Dev Oliver  
ESRI  
Redlands, CA  
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*To Datra and Drew*

# Preface

Our daily lives often revolve around spatial networks such as transportation networks and utilities. Summarizing the activities that occur on these networks is of interest to professionals, organizations, and researchers in many domains including transportation safety, public safety, public health, and disaster response. For example, transportation planners and engineers may wish to identify road segments that pose risks for pedestrians and require redesign whereas law enforcement officials may desire to know which streets have increased crime activity in order to guide resource allocation decisions.

The process of summarizing spatial network data entails finding a compact description or representation of observations or activities on large spatial or spatiotemporal networks. However, summarizing spatial network data can be computationally challenging for various reasons, depending on the domain. This brief explores two of the main challenges: (1) the many connected components in the spatial network and (2) the many candidates that have to be processed. These challenges are conceptualized as well-defined problems and state-of-the-art techniques aimed at addressing the problems are discussed.

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