



GIS Algorithms (SAGE Advances in Geographic Information Science and Technology Series)

By Ningchuan Xiao



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Geographic information systems (GIS) have become increasingly important in helping us understand complex social, economic, and natural dynamics where spatial components play a key role. The critical algorithms used in GIS, however, are notoriously difficult to both teach and understand, in part due to the lack of a coherent representation. **GIS Algorithms** attempts to address this problem by combining rigorous formal language with example case studies and student exercises.

Using Python code throughout, Xiao breaks the subject down into three fundamental areas:

- Geometric Algorithms
- Spatial Indexing
- Spatial Analysis and Modelling

With its comprehensive coverage of the many algorithms involved, **GIS Algorithms** is a key new textbook in this complex and critical area of geography.

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Editorial Review

Review

Xiao's book is a must-have for any GIS programmers, from beginners to professionals. Its sample programs in Python provide a rich library for key GIS algorithms.

(Fahui Wang)

This is a welcome book, which covers the major geographical algorithms for vector and point-based analyses, along with network travel analysis and optimal solution searches, in practical detail. Its concentration on applied Python examples is timely, and it is sure to be the go-to handbook for anyone wanting to build from-the-ground up GIS functions into Python software. In addition the algorithms are a good starting point for anyone looking to implement functions in other languages.

(Andrew Evans)

About the Author

Ningchuan Xiao is Associate Professor of Geography at the Ohio State University. He has taught a wide ranges of courses in GIS, spatial analysis, and cartography. His research focuses on the development of effective computational methods in spatial and temporal data handling.

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