Main book: available
8/15/2023
all case studies in ArcGIS Pro 3.1
Computational Methods and GIS Applications in Social Science – Lab Manual

Lingbo Liu
Fahui Wang

Lab manual in KNIME:
available 10/15/2023

Open for Innovation
KNIME
Version 5.1
Book Features

Computational Methods and GIS Applications in Social Science

Third Edition

Fahui Wang, Lingbo Liu

This textbook integrates GIS, spatial analysis, and computational methods for solving real-world problems in various policy-relevant social science applications. Thoroughly updated, the third edition showcases the best practices of computational spatial social science and includes numerous case studies with step-by-step instructions in ArcGIS Pro and open-source platform KNIME.

Recommendation

it is now very much a book that is a “must-read” for any social scientist who wishes to get a rapid but thorough exposure to GIS and the desktop software that makes it work.

Wang and Liu develop a very well-written operational guide to the most important GIS techniques available, and one of the great strengths of the book is that any potential user can pick it up and quickly adapt the techniques therein to their own problems.

This is an important resource for computational social science, as well as for urban science itself and social physics.

From the Foreword of Computational Methods and GIS Applications in Social Science
New Chapters on Agent-based Modeling and Big data analytics

Agent-based Modeling

Big Data Analytics

Newly Automated tools in ArcGIS Pro

Google Maps API for OD drive/transit times, Spatiotemporal KDE, 2SFCA/i2SFCA, 2SVCA, Garin-Lowry model, Waste Commute, Minimax, ... and

ArcGIS Toolbox
Regionalization: REDCAP & MLR
Functional region delineation
Functional region delineation
Maximum Accessibility Equality Problem
Agent-based crime simulation

Real-world case studies in social science, planning and public policy

Baton Rouge
Chicago
Urban Planning

Social Science
Public policy
Florida
Louisiana
Beijing
Jiangsu
Hubei

Intended for students taking upper-level undergraduate and graduate-level courses in quantitative geography, spatial analysis, and GIS applications, as well as researchers and professionals in fields such as geography, city and regional planning, crime analysis, public health, and public administration.

Data and Tool Support for implementing all case studies

Provides a website for downloading data and programs for implementing all case studies included in the book and the KNIME lab manual

Data Support

Tool Support

Geospatial Analytics Extension For KNIME
https://github.com/spatial-data-lab/knime-geospatial-extension

GitHub for Issue support

KNIME Hub Support

Center for Geographic Analysis
Harvard University
https://hub.knime.com/center%20for%20geographic%20analysis%20at%20harvard%20university
Agent-base Model

Handy Tools in ArcGIS Pro

Mix Level Regionalization

Maximum Accessibility Equality Problem
Geospatial Analytics Extension for KNIME
Developed by Harvard CGA and KNIME

KNIME workflow as Open Visual Programming Platform

Visualization

User Interface
Created by KNIME Component

2SVCA Model nodes

Colocation Model nodes

A Replicable
Reproducible
Extendable
Framework

GIS