
GEOINFORMATION AND SPATIAL PLANNING

Guest Editors

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Editorial

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Biographical notes: Zhenjiang Shen is a Professor at the School of Environmental Design, Kanazawa University, Japan. His research interests include urban policy and policy-making support. He is cooperating with some local governments in China and Japan for policy decision-making using GIS and VR. He also participated in diversified urban projects, such as the historical conservation plan of Beijing in the early stage, which won the second prize of Ministry of Construction, China in 1987. And in 2010, he won Heritage Conservation Award, Region IV, The International Union of Architects for his work on historical landscape visualisation for traditional temple building preservation district in Kanazawa.

Yan Ma is an Assistant Professor at the Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences. Her research interests cover development of planning support system for urban planning and design, agent-based modelling for policy making and natural resources management related to land use change and residential mobility. She has participated in the research projects of Housing Policy for Aged-Population supported by Ishikawa province, Survey in Historical Conservation Teramachi Area supported by Cultural Agency of Japanese Government and Land Use Simulation in Urban Partitions using Multi-Agent System supported by JSPS.

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In this special issue, we attempt to provide an insight on application of geoinformation and geospatial techniques in urban planning and design, such as geographic information system (GIS) and virtual reality (VR). All these case studies in this special issue refer to their application in Asian cities, which are on-field examples reflecting the enormous spread of geo-computation technology.

Geoinformation is recognised as an important information infrastructure that can be utilised in several fields, such as urban planning support, policy decision-making, urban growth and disaster prevention simulation, etc. The urban planning and design are usually seemed as the keys for coordination of urban activities within the complex social system. One research of this special issue, entitled 'Urban planning support systems in Japan: evolutions and implications', introduces Japan's institutional efforts on city-level information systems and geospatial databases in its various historical phases. Through a case study in Kawasaki, the author illustrates the development of planning support systems in Japan and the current challenges as well.

By using geospatial-temporal analysis, researchers can identify patterns of the social structural changes in the process of urban growth. In the work of 'Social-spatial structure of Beijing: a spatial-temporal analysis', the evolution of Beijing's social-spatial structure in the transforming process over the past 20 years has been examined. The results provide useful findings for future urban planning and policy making on Beijing Metropolitan Area.

Based on spatial analysis of statistical data in urban structure, we can also conduct further observation on human behaviours in cities. In the work of 'Spatial distribution and influential factors of urban crime', the authors argued that the high crime rate with rapid industrialisation and urbanisation became a major social issue in some countries, such as Korea. Basing on the understanding of urban network, it would be able to investigate the spatial patterns of crime occurrence and characteristics. It is able to identify the factors that affect the crime occurrence, the characteristics of crime distribution in the urban space.

Urban development also confronts with the increasingly serious threats of natural disasters. In the research, 'A workshop support tool combining disaster-mitigation performance evaluation and virtual reality for the improvement of densely built-up areas', the authors proposed that the combined technologies of GIS and VR are a vivid way for simulation and examination of disaster mitigation in densely built-up city areas. It is proved that the lack of performance evaluation on the draft plans as well as an inability to clearly share a visualisation for disaster mitigation, are among the main factors negatively affecting decision making during planning workshops.

For archiving sustainable urban form, the work of 'Decision making of a local sustainable development policy by using GIS: application to the transportation sector in Ghardaia, Algeria' shows us how geographical information system (GIS) and sustainable indicators can be used to develop policy scenarios for local sustainable development in the transportation sector. In this research, the planning indicators, which were identified spatially by GIS, will be helpful for planning authorities to decide appropriate policies based on different scenarios. For evaluating connectivity and centrality of social facilities, such as hospitals of a city, based on urban network, a tool is developed in the work of 'Graph entropy as tool for understanding complex urban networks. The case of Ensenada city, Mexico'. In this work, the authors tried to employ graph entropy theory to explain the substratum over which human urban life develops.

The studies collected in the special issue offer an excellent glimpse at geoinformation and geospatial techniques, which are employed to visualise spatial patterns of human activities and support decision-making in the process of spatial planning. All submitted manuscripts were peer-reviewed by at least two referees. The guest editors would like to thank the reviewers for their hard work, time and valuable comments and suggestions that make this special issue possible.