عنوان مقاله:

AUTOMATIC ROAD EXTRACTION FROM IKONOS PAN-SHARPENED IMAGES USING MATHEMATICAL MORPHOLOGY

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نویسندگان:

Ali Mohammadzadeh - *Geodesy and Geomatics Engineering Department, K.N.Toosi University of Technology*

Ahad Tavakoli - *Electrical Engineering Department, Amir-Kabir University of Technology*

Mahammad Javad Valadan Zoej - *Geodesy and Geomatics Engineering Department, K.N.Toosi University of Technology*

خلاصه مقاله:

Nowadays, obtaining and interpreting data is a common challenge for development purposes like in geologic applications, vegetation applications, urban and land use applications, exploration of extraterrestrial bodies, oceanographic and hydrologic applications, and agriculture applications. Remote Sensing (RS) is the leading science providing the data for this goal. The ultimate goal of RS is extracting radiometric and spatial features from images. But it takes about five to ten years to train reliable operators capable of extracting those features from satellite imageries. Therefore automatic extraction of geospatial phenomena is subject of extensive research for the past decade. The subject is quite young and major approaches are not mature. Feature extraction major methodologies are fusion-based approach (Pigeon etal., 1999), fuzzy-based approach (Agouris etal., 1999), mathematical morphology (Zhang, 1998), model-based approach (Buckner, 1998), dynamic programming (Gruen etal., 1995) and multi-scale grouping and context (Mayer etal., 1997). The most prominent linear topographic features are roads, rivers, railways and vegetation boundaries. Roads are important large-network man-made structures. The goal of this research is automatic extraction of roads from pan-sharpened IKONOS images (Using MATLAB software). Here an approach based on mathematical morphology is introduced. In this approach, advanced morphology concepts like ‘trivial opening’, ‘granulometry’ and ‘skeleton’ are used. Small objects and narrow paths and noises are removed. Shadows of trees and buildings that cause in partially covered roads are recovered. This method is successfully performed on a Pan-sharpened IKONOS image from rural region located in KISH Island and extracted road centerline is very promising and precise especially in conjunctions or curved parts. The extracted road centerline can be easily inserted .in a Geospatial Information System

کلمات کلیدی:

Mathematical Morphology, Automatic Linear Feature Extraction, Pan-sharpened IKONOS