

基因演算法自動演化類神經網路應用於山崩災害之評估

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摘要 本研究運用基因演算法自動演化類神經網路之架構，將其應用於衛星影像之判釋分類及坡地利用引致山崩災害之評估。研究中針對東台灣集水區坡地利用各項致災因子進行量化分析，並藉由坡地開發程度、雨量及崩塌與否之關係，以判別分析方法結合地理資訊系統平台繪製災害潛勢圖，建立一套坡地利用因子影響降雨引致之山崩災害評估方式與流程。本研究結果將可提供集水區永續經營治理對策擬定之參考依據。

關鍵詞：山崩、坡地開發、衛星影像判釋、類神經網路、基因演算法、判別分析、地理資訊系統。

Assessment of Landslides Based on Genetic Adaptive Neural Networks

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ABSTRACT In this research, genetic algorithm is used to evolve the framework of artificial neural networks automatically. The genetic adaptive neural networks are employed in the classification of satellite images and assessment of landslide disaster due to hillside land use. Hillside land use factors causing landslide in the watershed of eastern Taiwan are quantified. Using discriminant analysis to classify the relations of developing level, rainfall and landslide and using geographic information system, a working platform to plot disaster potential map is established. The assessment procedures for rainfall-induced landslides are constructed. This research result can be a help for sustainable management of watershed.

Key Words: Landslides, Satellite images classification, Artificial neural networks, Genetic algorithm, Discriminant analysis, Geographic information system

一、前言

臺灣因山區地形陡峻，每逢颱風或暴雨來襲，易因集中性降雨而引發崩塌與衍生土石流的現象，並造

成土石災害。近年來已有多位學者針對相關山崩災害之致災因子進行調查與探討（張石角，1987；Mora and Vahrson, 1993；Fernandez *et al.*, 1999；Popescu, 2002），正如其他自然災害，每個崩塌地

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