A New Parallel Neural Network System for Automatic Change Detection and Classification of Digital Images

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Abstract

Change detection and classification of images are the most important applications in remote sensing systems, that involves pattern identification of a pair of spatially registered images acquired for the same object at two different conditions. A neural network- based change detection and classification system using improved mathematical model of the back-propagation-training algorithm was developed. This model will accelerate the convergence of the network to the solution. Also, the developed model has been parallized to speed up the overall proposed system that will be suitable for processing of satellite images. This system is implemented on a distributed parallel machine using PVM (Parallel Virtual Machine) layer. Two case studies, photographic images and TM (Thematic Mapper) satellite images were used, to evaluate the performance of the new system. The output results are analyzed and compared with conventional system.

Keywords: Neural Network, Change Detection, Classification of Digital Images.

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Research Interests:

1. Image Processing
2. Modeling and Simulation
3. Neural Networks
4. Artificial Intelligence
5. Parallel Processing