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Volumes
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Title and Author Search
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AN INVESTIGATION OF AUTOMATIC CHANGE DETECTION FOR TOPOGRAPHIC MAP UPDATING

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Abstract. Changes to the landscape are constantly occurring and it is essential for geospatial and mapping organisations that these changes are regularly detected and captured, so that map databases can be updated to reflect the current status of the landscape. The Chief Directorate of National Geospatial Information (CD: NGI), South Africa's national mapping agency, currently relies on manual methods of detecting changes and capturing these changes. These manual methods are time consuming and labour intensive, and rely on the skills and interpretation of the operator. It is therefore necessary to move towards more automated methods in the production process at CD: NGI. The aim of this research is to do an investigation into a methodology for automatic or semi-automatic change detection for the purpose of updating topographic databases. The method investigated for detecting changes is through image classification as well as spatial analysis and is focussed on urban landscapes. The major data input into this study is high resolution aerial imagery and existing topographic vector data. Initial results indicate the traditional pixel-based image classification approaches are unsatisfactory for large scale land-use mapping and that object-orientated approaches hold more promise. Even in the instance of object-oriented image classification generalization of techniques on a broad-scale has provided inconsistent results. A solution may lie with a hybrid approach of pixel and object-oriented techniques.

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