

# **Building Change Retrieval Using Discriminative Random Field Model**

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Management and protection of terrestrial ecosystems is a key element of sustainable development in regions which undergo very rapid development. In particular, rapid growth of urban areas, if not monitored properly, can lead to the shrinkage of agricultural fields in peri-urban zones, or to all types of problems such as water and air pollution, excessive traffic, etc. A good urban development and management planning, based on sophisticated and advanced techniques, is therefore of prime importance. The work introduced in this paper is part of a wider project aiming at developing methodologies and tools to provide decision support for urban growth planning. In term technical objective, the project will set up semi-automatic digital map updating techniques, with application to urban areas. The specific objective of the present work is to achieve building change retrieval from a multi-temporal set of very high resolution optical remote sensing images. Based on previous works introduced by S. Kumar and M. Hebert, we propose an improvement and generalization of the Discriminative Random Fields model (DRF). The main concept of the method is to search for the changes of connected structured elements (building, roads, etc). The method enables to retrieve the position of the new buildings, but not necessary the exact contours delineation. Application and validation has been performed using panchromatic Quickbird images (0.6 m/pixel), covering Beijing city and acquired between the years 2002 and 2004.