Road Extraction from Satellite Images

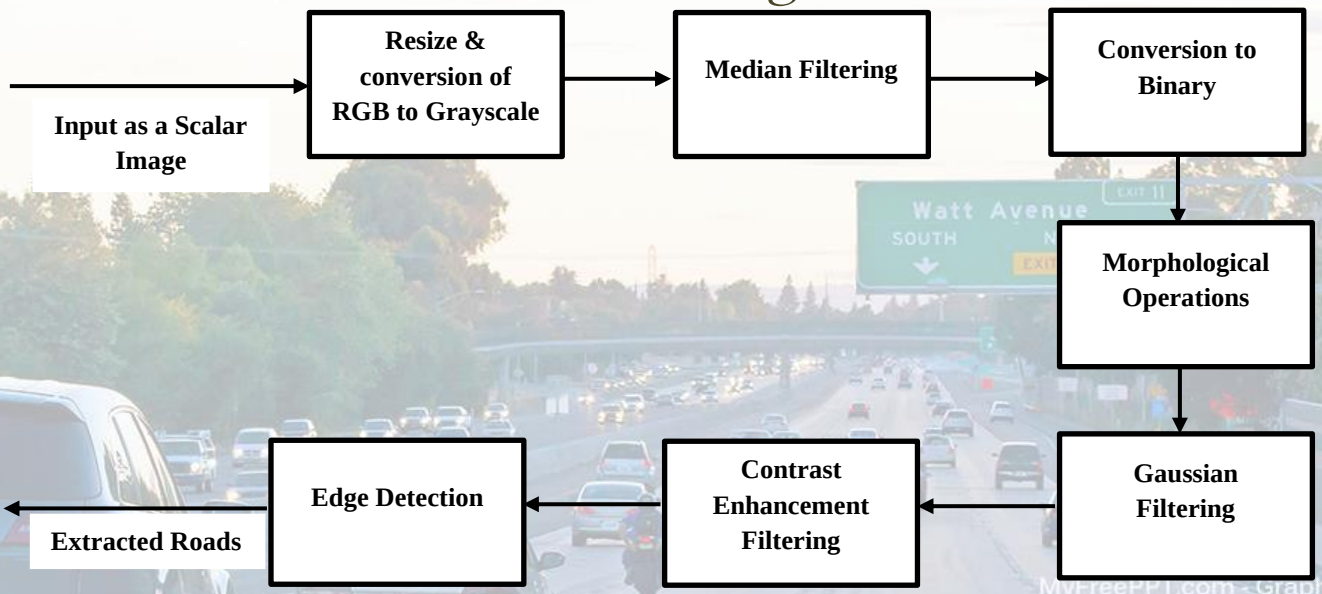
An Efficacious and Sturdy Technique……

Abstract

In today's world of growing population, the need for urban planning is very high. In this paper, an automatic approach for road extraction is proposed to extract the road components from a given set of database (satellite images) is explained. Roads play a vital role and important role in urban planning and thus, its extraction can be of great help. The importance of road extraction from satellite images arises from the fact that it greatly enhances the efficiency of map generation and thus can be a big help in car navigations systems or any emergency (rescue) system that needs instant maps. The other applications of road extraction are: identification of isolated buildings that need to be detected and updating of GIS database & applications according to the requirements of the human expertise. In this method, the image is first pre-processed to identify the colour space components. Then morphological method is used to remove the unwanted objects in the image. It is also less time consuming and an automatic method.

Scope & Goal

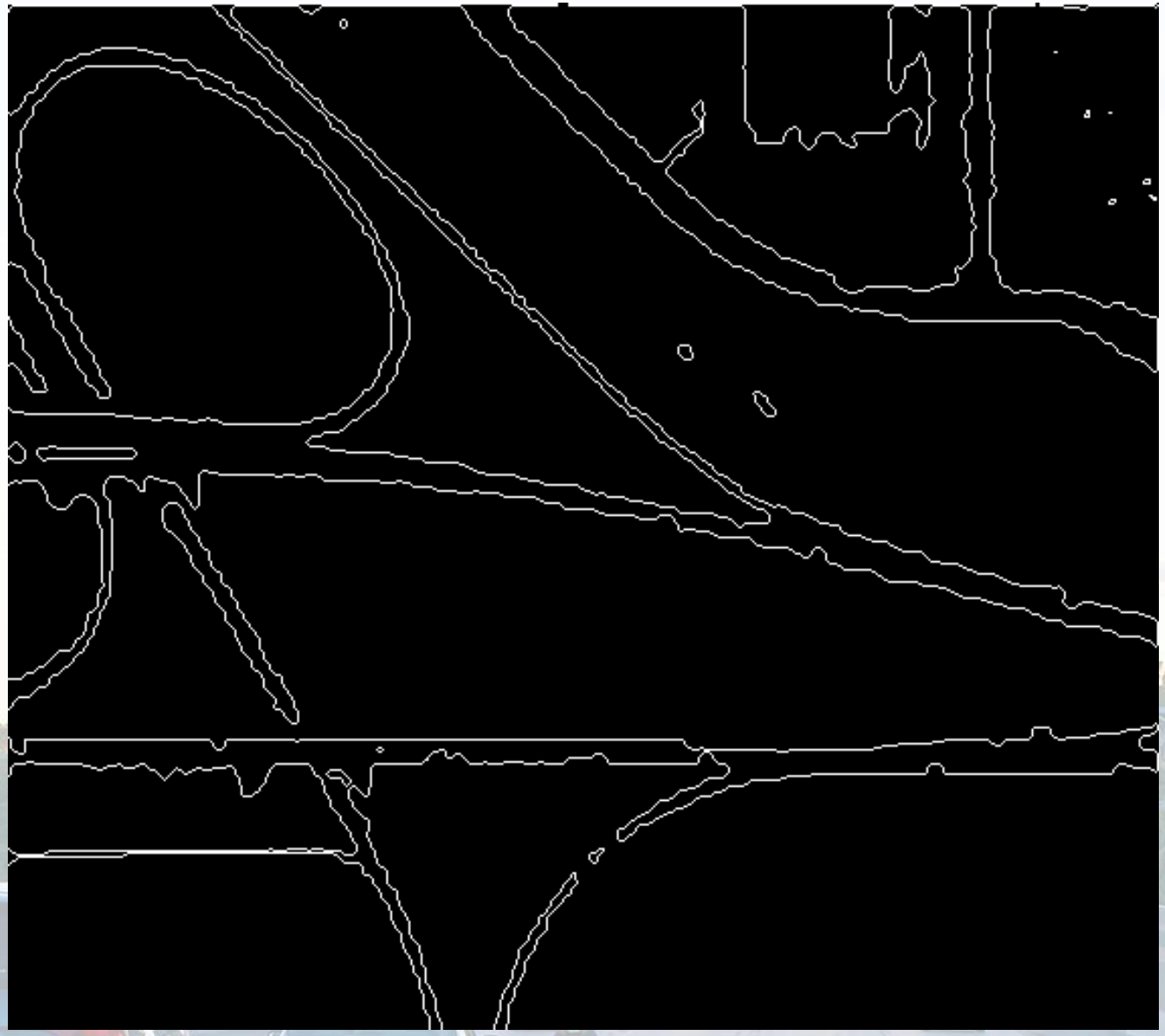
This study is devoted to explore the problem of road extraction and to propose a road extraction algorithm based on image processing. In high resolution satellite images, roads could be regarded as elongated homogeneous regions that contrast from background with distinct spectral behaviour. Based on this model, automatic road extraction from this kind of images can be categorized in three steps as road detection, road thinning and centreline extraction and finally vectorization of extracted road skeleton. Furthermore other methods like artificial intelligence can also be used to obtain an even accurate image.



Median Filtering

Binary Image

Morphological Filtered Image



Result Obtained