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FIGURE ORIENTED GLOBAL RECOGNITION METHOD OF MAPS

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Abstract. Global Recognition(GR) method is a very good recognition method of drawings. Using the method, lines are vectorized through the topological relation of patches which are formed by the row scan process. There is wide foreground if the method is applied to map recognition field. But map recognition has its own features, so GR should be changed or improved for the new application field. In this paper, based on the analysis of the features of global recognition, a new method of Figure Oriented Global Recognition (FOGR) method for maps is presented. FOGR recognizes figures directly from patches, through analyzing the topological relation of patches. It is very good at extracting figures from maps. On theory, FOGR is closer to the process of reading drawings of human. Experiments show that the result of FOGR is very exact.

Keywords. figure oriented, global recognition, map recognition.
AMS (MOS) subject classification: 65N30.

1 Introduction

Map recognition is an essential data input means of Geographic Information System (GIS). In many cities, water supply, power supply and gas supply establishment is managed with corresponding GIS, which makes management work much easier. Currently, many systems of this kind are under developing, but the vectorization of a large number of hand-drawing maps is always a great obstacle in the process. There already are some map vectorization softwares, such as SCANIN (made in Canada by Apollo corp.), R2V (USA by Able software corp.), WINTOPO (UK by Softsoft corp.), and GEOSCAN (CHN by Beijing Geweit corp.), etc. Each of the above has many useful functions, and applies many good vectorization approaches, such as skelecton tracking, contour tracking. They are very fit for converting image data into vector line data, but they pay no attention to what figure the extracted vector lines belong to. In fact, the aim of map recognition is to build up a map understanding ability of computer, to let computer recognize maps with its own knowledge, to extract not only lines, but also figures. Because only figures can be endued with geographic meanings. In this paper, we first apply global recognition(GR)[1] method to recognition of engineering drawings,