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Abstract

This paper reports on a new technique for unconstrained license plate detection in a surveillance context. The proposed algorithm quickly finds license plates by performing the following steps. The image is first preprocessed to extract the edges; opening with linear structuring elements ensures that plate sides are enhanced. Multiple scans using the Hausdorff distance are made through the vertical edge map with binary template representing a pair of vertical lines (with varying gap to account for unknown plate size), so they efficiently pinpoint areas in the image where plates may be located. Inside those areas, the Hausdorff is used again, this time over the gradient image and with a family of templates corresponding to rectangles which have been subjected to geometric transformations (to account for perspective effects). The end result is a set of plate location candidates, each associated to a confidence level that is a function of the quality of match between the image and the template. An additional criterion based on the symmetry of plate shapes also supplies complementary information about each hypothesis that allows rejection of many bad candidates. Examples are given to show the performance of the proposed method.

Keywords

License plate detection, Hausdorff distance, rectangle detection, symmetry.