

Plate number recognition systems based on a contours and character recognition approach

ABSTRACT

License plate recognition system (LPR) plays an important role in intelligent traffic control system. However, most of the existing LPR are complex and hard to implement. The aim of this project is to improve the LPR techniques in terms of speed and accuracy by applying the Connected Component Analysis (CCA) and K-Nearest Neighbour algorithm (KNN). The LPR is divided into three stages which are image pre-processing, character segmentation, and character recognition. First, the input plate image will undergo some image property functions such as omission of noise to enhance the quality of the image. The CCA is applied to segment the characters by drawing rectangle boxes on each character, based on contours to extract the characters into smaller images. These images are then used as query images in character recognition stage. The images are fed to a pre-defined KNN classifier to determine the features of each image and to identify them. Five experiments were carried out to validate the proposed system. Ten Malaysia single row plate images and two foreign plate images were used as the input images on these tests. The findings show that the proposed system has an 80.0% success rate in segmentation, 92.21% accuracy rate in recognition, the optimal K value is 1, and the input image must be in a single row and comprises of a black background and white characters namely letters and digits. In conclusion, a prototype for plate number recognition has been developed with a high success rate in segmentation and a high accuracy in character recognition. Suggested future studies include a focus on segmenting double row license plates and recognizing similar characters.