
Abstract

License Plate Rectification is an automated technique for correcting distortions and noise in license plates. Despite previous work, the existing rectification systems still face challenges in rectifying distorted or tilted license plates within the range of 30-45 degrees. This work aims to develop a License Plate Rectification system focusing on the rectification stage using Planar Homography. License plate detection is performed as a localization step using a YOLOv7 Convolutional Neural Network. Planar Homography is chosen for its effectiveness in correcting perspective distortions compared to affine transformation. The proposed system outperforms IWPOD-Net in most scenarios but still faces challenges in extreme tilt angles and red-colored plate detection. The overall accuracy of IWPOD-Net is 76.66%, whereas the proposed system achieves 88.03%. These results confirm the superiority of the developed system compared to IWPOD-Net. For future improvements, further work is recommended for the proposed system, especially in enhancing resistance to extreme camera angles.

Keywords: License Plate Rectification, Planar Homography, Convex Hull, Contour Detection, Perspective Projection
