ABSTRACT

Rectifying perspective in vehicle license plate images is essential where cameras are positioned at non-ideal angles. This misalignment for placing license plates hinders obtaining a standardized,front-facing view necessary for precise analysis. While existing rectification methods are effective for moderate distortions, typically within a 45-50 degree range, they struggle with severe changes in perspective. This research describes an enhanced rectification approach that utilizes trigonometric modeling more efficiently than before in perspective correction, allowing images taken at challenging angles to be corrected more accurately and efficiently. By utilizing forces defined in trigonometry, the technique further develops the existing principles of image rectification, which makes the range of effective correction more exhaustive. In terms of traffic and surveillance applications, positioning the cameras is often limited. The succes rate result is that 94.5% of the Chinese dataset (CCPD, CLPD, CTPFSD), 86.66% of the Indonesian dataset, 90% of the European dataset, 90% of the Japanese dataset, and 90% of the United States dataset can be rectified and read by OCR, with a tilt degree of up to 80 degrees. For future improvement, license plate segmentation needs to be more robust due to low-light situations with dark colors.

Keywords: Rectification, image, projective, Trigonometrics, License Plate