

Title: Performance Evaluation of YOLO Models for Detecting Bangladeshi License Plates

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Abstract: This research paper presents a comprehensive investigation into the effectiveness of YOLO (You Only Look Once) models, namely YOLOv5, YOLOv7, and YOLOv8, in the domain of Bangladeshi license plate detection. With the escalating demand for precise license plate recognition systems to facilitate efficient traffic management and bolster law enforcement efforts, this study conducts an in-depth evaluation of these models. Central to our methodology is the development of a specialized dataset comprising Bangladeshi license plate images, reflecting the unique characteristics and challenges prevalent in this geographical context. Through meticulous dataset curation, model training, and rigorous testing procedures, we ascertain the performance metrics of each YOLO variant. Notably, our findings reveal YOLOv8 as the most proficient model, achieving a remarkable mean average precision (mAP) score of 0.934 with precision 0.93 and recall 0.906. The insights gleaned from this research contribute significantly to the advancement of intelligent transportation systems and public safety initiatives in Bangladesh, offering tailored solutions for license plate detection challenges in this specific locale.

Keywords: License plate, License plate detection, YOLO v5, Yolo v7, Dataset, Annotation

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