

## **ABSTRACT**

*This research aims to develop a real-time cell phone usage detection system for drivers by leveraging the YOLOv8 algorithm based on computer vision. The system is designed to detect driver behavior related to holding or using a cell phone by analyzing the spatial overlap between the phone object and the driver's hands or face. The dataset used comprises two main categories: phone-holding behavior and phone object detection, with over 6,000 labeled images processed through annotation, augmentation, and preprocessing. Model training was conducted on the Kaggle platform using GPU resources, achieving strong detection performance with an mAP@0.5 of 89.5%, precision of 83.2%, and recall of 85.6%. The system was evaluated under controlled simulation scenarios and demonstrated reliable accuracy across different visual conditions. Although not yet implemented in a real vehicle environment, the system shows promising potential as a preventive solution to improve road safety.*

*Keywords: Computer Vision, Driver Behavior, Telepon genggam Detection, Real-time Detection, YOLO (You Only Look Once)*