

ABSTRACT

The increasing number of visitors in open-space tourist destinations such as Kawah Putih highlights the need for an accurate and efficient crowd monitoring system to support decision-making processes in ensuring visitor safety and comfort. This study presents the development of a real-time movement-based people counting system using the YOLOv8 object detection algorithm combined with a centroid tracking method. The system differentiates between entry and exit movements by implementing a line crossing detection technique. The detection results are integrated into a web platform using the Flask framework, allowing real-time visualization of visitor flow data in graphical and tabular formats. System testing was conducted during the crowded events.. The results demonstrate that the system effectively detects individual movement with high accuracy and stable performance under various environmental conditions. This research confirms that AI- and computer vision-based crowd monitoring systems can be practically implemented to enhance modern, non-invasive tourist area management

Keywords: crowd detection, movement counter, YOLOv8, centroid tracking, real-time monitoring, tourist destination.