



## **A HYBRID FUZZY MORPHOLOGY AND CONNECTED COMPONENTS LABELING METHODS FOR VEHICLE DETECTION AND COUNTING SYSTEM**

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*Abstract- A hybrid fuzzy morphology and connected components labeling method is proposed for detecting and counting the number of vehicles in an image taken from a traffic monitoring camera. A fuzzy morphology approach in image segmentation method is used in the system to achieve faster computation time compared to the supervised learning. The connected components labeling method is combined with a fuzzy morphology method to determine the region and number of objects in an image. The processing phases in the proposed system are image preprocessing, image segmentation, and vehicle detection and counting the number of vehicles. Images are captured from the traffic monitoring cameras installed in highways. Results from testing phase using fifteen images with varying brightness, contrast, and quality taken from different cameras during daylight showed that the accuracy of the system in counting the number of vehicles is 78.21%.*

**Index terms:** connected component labeling; fuzzy morphology; image segmentation; vehicle detection.