

**Department of Computer Science & Engineering**

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**Final Year Project Literature Reviews**

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| **Prj Grp No** | 2024CSEAIML\_2408 | |
| **Project Title** | Cogniflow AI: Advanced adaptive traffic signal & vehicle classification system | |
| **Write few lines on what you have studied so far** | From Literature [1] the author proposed that the system of car detection and tracking was presented based on the camera technique by using background subtraction and BLOB analysis. In addition, the system further improved to increase the accuracy in the detection of vehicle through Kalman filter method, which is considered as the supporting technique. Video dataset captured using low-cost camera that actually captures kind of traffic scenarios and different lighting conditions. The yield of the experiment was around 85% probable detection rate for normal traffic. With adverse weather or low light, the accuracy went into the tank indicating that the method is more sensitive to conditions and camera quality, which causes detection failure as well as missing vehicles. | |
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| From Literature [2] the author proposed that The system aims at automating traffic signal control by the installation of CCTV cameras, application of machine learning techniques for edge detection and classification algorithms to ensure the rate of flow of vehicles. Data employs footage taken by 2MP cameras at specific intersections. The system was accurate in detecting vehicles to a 80% degree. It was also good under normal conditions but this is a kind of weakness where the case of highly dense traffic exists, or low-resolution images are taken. This weakens the reliability of the model. Another major challenge towards continuous operation in this sort of system would be the necessity of having an internet connection at all times for real-time monitoring in remote areas with unstable networks. | |
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| From Literature [3] the author proposed that with this literature work, I came to the conclusion that UAV-based performance in pedestrian and vehicle detection can be improved to a massive extent due to integration of Swin Transformer and CBAM in YOLOv8 model as the given VisDrone2019 dataset is much richer in various diversity urban scenes, which enhanced the capability of the model in detecting the smaller as well as occluded objects as well with an increased mAP of about 4.8% for the YOLOv8s. Despite these developments, the model fails to pick very small objects, such as bicycles and tricycles, in chaotic scenes and is computationally very intensive because of the complexity of its structure. | |
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| Based on the findings from Literature [4], the author concluded that deep learning-based models for Indian traffic sign detection and recognition can achieve accuracy above 90% when using convolutional neural networks trained on diverse data. The model accurately identifies signs in various conditions; however, it struggles with worn-out or partially obscured signs, and its performance degrades in poor lighting conditions. Moreover, the model's deployment across different regions is significantly limited due to the need for a large labeled dataset, as traffic signs vary between regions. Continuous updates of the data are essential to further improve the model's detection accuracy. | |
| **paper title / project title and give their web-links (you have read)** | **\*Real Time Traffic Management Using Machine Learning(1)**  **https://ieeexplore.ieee.org/abstract/document/9077777** | |
| \***Computer Vision in Control and Optimization of Road Traffic(2)**  **https://ieeexplore.ieee.org/abstract/document/9204329** | |
| **\*Indian traffic sign detection and recognition using deep learning(3)**  **https://www.sciencedirect.com/science/article/pii/S2046043022000557** | |
| **\*PVswin-YOLOv8s: UAV-Based Pedestrian and Vehicle Detection for Traffic Management in Smart Cities Using Improved YOLOv8(4)**  **https://www.mdpi.com/2504-446X/8/3/84** | |
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**Student Signature(s) with date Project Mentor Signature with date**