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**VUEBLOX: Towards Explainable and Occlusion Aware Crowd  
Anomaly Detection**

A Project Proposal by

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## ABSTARCT

Strong video surveillance systems are essential when it comes to preventing suspicious activities in public areas. In the context of urban security, detecting anomalous activities plays a huge role in densely populated public areas. Current anomaly detection approaches are facing drawbacks in the performance due overlapping of individuals, objects in crowded areas and the underlying reason behind the anomaly detection is absent. The research aim of this project is to find a solution to handle occlusion and interpret the detected results where it will increase the effectiveness and trustworthiness of the model.

To overcome this limitation, this research introduces a novel architecture towards occlusion aware and explainable crowd anomaly detection. The contribution of this architecture is the occlusion handling module, anomaly detection module and interpretation module. Occlusion module includes MAE, GAN, and GNN. Anomaly detection module integrated with SimCLR, GNN, sparse and LSTM. The system uses ensemble voting for robust anomaly detection, providing comprehensive interpretability through Grad-CAM and graph-based explanations.

The proposed novel architecture outperforms the current state-of-the-art approaches and it archived 99.62% accuracy, ROC 99.33% and f1-score 99.3% during testing phase. This guaranteed that this architecture is contributing to the domain and the interpretation of the detection provides the valuable insights which makes the proposed approach as great research.

**Keywords:** Crowd anomaly detection, Deep learning, Occlusion handling, explainable AI

### Subject Descriptors:

Computing methodologies → Artificial intelligence → Computer vision → Computer vision tasks → Scene anomaly detection

Computing methodologies → Machine learning → Machine learning approaches → Neural networks

Security and privacy → Human and societal aspects of security and privacy → Social aspects of security and privacy