Qeios

Peer Review

Review of: "Exploring the Magnitude-Shape Plot Framework for Anomaly Detection in Crowded Video Scenes"

Mohammad Kazem Moghimi[1]

1. Sistan & Balouchestan University, Iran, Islamic Republic of

1. **Complexity**: The proposed method, especially the MAMA-MS-Plot, is computationally intensive. The combination of deep learning models with the MS-Plot framework may require significant computational resources, which could limit its applicability in real-time systems.

2. **Dataset Limitations**: While the method performs well on the UCSD Ped2 and CUHK Avenue datasets, these datasets are relatively small and may not fully represent the diversity of real-world crowded scenes. Testing on larger and more diverse datasets would strengthen the claims of generalizability.

3. **Threshold Determination**: The paper does not provide a detailed discussion on how the threshold for anomaly detection is determined. A more systematic approach to threshold selection could improve the method's robustness.

4. **Comparison with Deep Learning Methods**: While the paper compares the proposed method with several state-of-the-art techniques, it could benefit from a more in-depth comparison with recent deep learning-based anomaly detection methods, particularly those that leverage advanced architectures like transformers or graph neural networks.

5. **Real-Time Application**: The paper does not discuss the feasibility of deploying the proposed method in real-time systems. Given the computational complexity, it would be valuable to explore potential optimizations for real-time anomaly detection.

Suggestions for Improvement:

1. **Scalability**: The authors should consider testing the method on larger and more diverse

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datasets to demonstrate its scalability and generalizability to different environments.

2. **Threshold Selection**: A more detailed discussion on how the threshold for anomaly detection is determined would be beneficial. The authors could explore adaptive thresholding techniques to improve the method's robustness.

3. **Real-Time Feasibility**: The paper should address the potential for real-time application, including possible optimizations to reduce computational overhead.

4. **Comparison with Advanced Methods**: The authors should consider comparing their method with more recent deep learning-based approaches, particularly those that have shown promise in video anomaly detection.

5. **Ablation Studies**: Conducting ablation studies to understand the contribution of each component (e.g., the MS-Plot, the autoencoder, and the MAMA model) to the overall performance would provide deeper insights into the method's effectiveness.

Declarations

Potential competing interests: No potential competing interests to declare.