

Peer Review

Review of: "GAF-FusionNet: Multimodal ECG Analysis via Gramian Angular Fields and Split Attention"

Hassanali Virani¹

1. Department of Electronics and Telecommunication Engineering, Goa College of Engineering, Goa Velha, India

This paper introduces a novel multimodal framework (GAF-FusionNet) for ECG classification that integrates time-series analysis with image-based representation using Gramian Angular Fields (GAF). A novel dual-layer cross-channel split attention module, facilitating adaptive fusion of temporal and image-based modalities in ECG classification, is used. Hence, a novel feature exists in the paper.

GAF-FusionNet is evaluated using three diverse ECG datasets: ECG200, ECG5000, and the MIT-BIH Arrhythmia Database. Hence, sufficient variation in databases is included in the work.

Metrics used: Accuracy, F1-score, and "Area Under the Receiver Operating Characteristic Curve" (AUC-ROC) are adequate for performance evaluation.

Performance comparison with state-of-the-art methods is also included, where the results from this model demonstrate improvements.

The disadvantage is the increase in computational complexity. Ablation studies show that the improvement obtained with this model over a single modality is not significant compared to the increase in the complexity of the model.

Conclusion: A novel approach using GAF is presented, which adds value to the paper and contributes to the overall knowledge base. Hence, it is recommended for acceptance in its present form.

Declarations

Potential competing interests: No potential competing interests to declare.