Conference Name: International Conference on Science & Technology, 06-07 May 2026, Kuala Lumpur
Conference Dates: 06-May-2026 to 07-May-2026
Conference Venue: Hotel Capitol, Bukit Bintang, Kuala Lumpur, Malaysia
Appears in: MATTER: International Journal of Science and Technology (ISSN 2454-5880)
Publication year: 2026

Wali & Samina, 2026
Volume 2026, pp. 41-42
DOI- https://doi.org/10.20319/stra.2026.4142
This paper can be cited as: Wali, S. & Samina, S. (2026). An Efficient Level Set-Based Method for Enhanced Cardiac Image Segmentation. International Conference on Science & Technology, 06-07 May 2026, Kuala Lumpur. Proceedings of Scientific and Technical Research Association (STRA), 2026, 41-42

AN EFFICIENT LEVEL SET-BASED METHOD FOR ENHANCED CARDIAC IMAGE SEGMENTATION

Samad Wali
General Education Centre, Quanzhou University of Information Engineering, Quanzhou, Fujian, 362000, China
wali_samad@qzuie.edu.cn

Samina Samina
General Education Centre, Quanzhou University of Information Engineering, Quanzhou, Fujian, 362000, China
wali_samad@qzuie.edu.cn

Abstract

In the domain of medical image analysis, accurately segmenting cardiac images remains challenging due to issues like intensity inhomogeneity, poor contrast, noise patterns, and blur. To address these challenges, this paper introduces an innovative strategy by utilizing region-based level set evolution in conjunction with the fast algorithm known as Alternating Direction Method of Multipliers (ADMM). By integrating ADMM into the proposed level set model for segmentation, our approach aims to overcome previous limitations, enhancing segmentation accuracy, and concurrently optimizing time efficiency. Through comprehensive experimentation and validation on diverse cardiac image datasets, this paper contributes to advancing segmentation techniques in medical imaging, ultimately enhancing diagnostic capabilities in clinical settings.

Keywords:
Level Set Method, Cardiac Image Segmentation, Intensity Inhomogeneity, Alternating Direction Method of Multipliers

Introduction:

The Proposed framework (**Figure 1**) provides several significant advantages in the context of cardiac MR imaging:

1. Faster Convergence, 2. Improved Robustness, 3. Edge-Preserving Bias Correction, 4. Stable Contour Evolution.

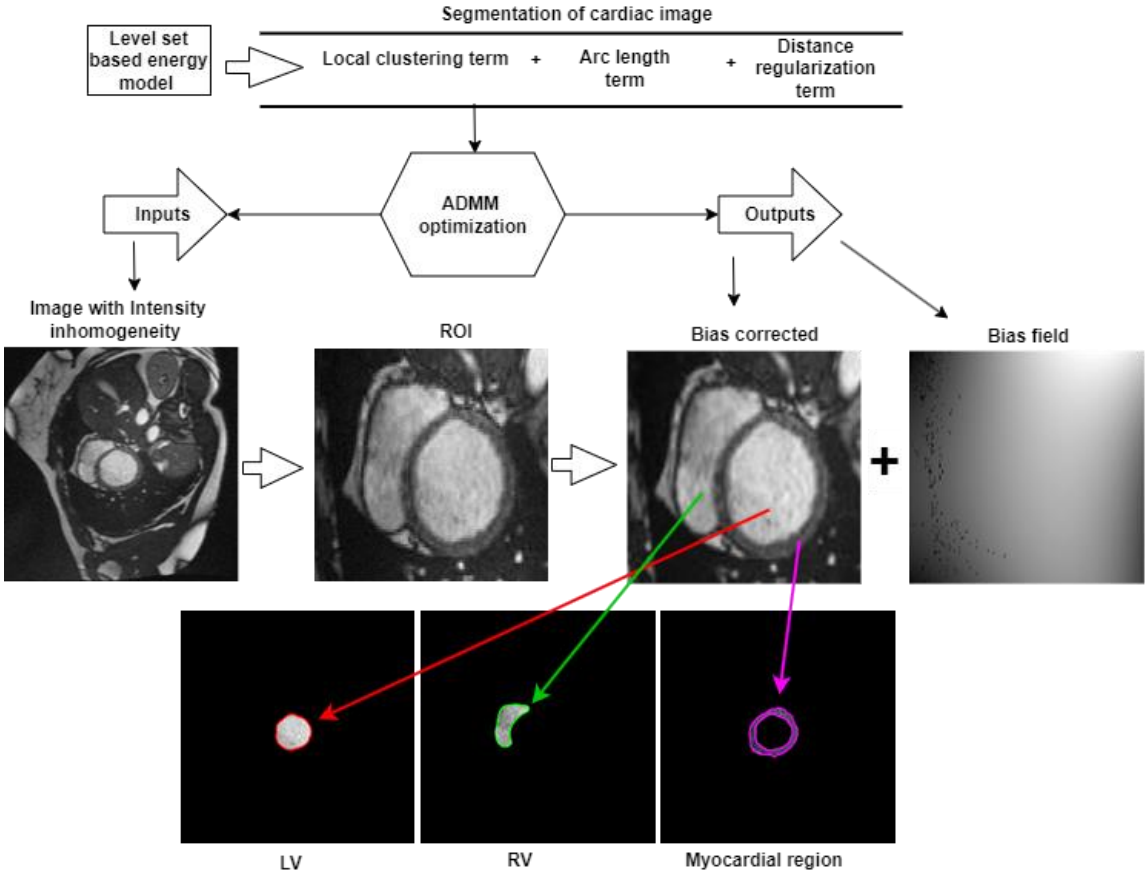

Figure 1: *Overview of the Proposed Framework. The diagram provides a schematic representation of the components.*