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REVIEWER'S REPORT

Manuscript No.: 50321 Date: 19-02-2025

Title: **YOLOv10 and SAM 2.1 for Enhanced MRI Segmentation and Improved Neurological Disease Diagnosis**

Recommendation:
Accept after minor … **YES**
Accept after major revision … …
Do not accept (*Reasons below*) ……

Rating	Excel.	Good	Fair	Poor
Originality			Yes	
Techn. Quality			Yes	
Clarity		Yes		
Significance		Yes		

Reviewer Name: Gulnawaz Gani

Reviewer's Comment for Publication

This paper presents fusion of YOLOv10 and SAM 2.1, significantly enhancing MRI-based neurological disease diagnosis with superior accuracy and interpretability. The comprehensive dataset, explainable AI approach, and well-balanced performance analysis make it a good contribution to medical AI research.

Detailed Reviewer's Report

- **The paper** Combines **YOLOv10** for object detection and **SAM 2.1** for precise segmentation, enhancing MRI-based neurological disease diagnosis.
- Uses **12,121 MRI images** across **12 classes**, evaluating six YOLOv10 models, with **YOLOv10-X achieving top accuracy**.
- Utilizes **plasma colormap visualization** for better interpretability, aiding **clinical decision-making**.
- Benchmarks against existing models, demonstrating **superior detection, segmentation, and classification performance**.
- Highlights **trade-offs** between lightweight (real-time) and high-accuracy models for different **medical applications**.
- Proposes **multimodal imaging (CT, PET), edge-device deployment, and enhanced XAI** for real-world medical use.
- The paper is a good contribution to the journal.