

Peer Review

Review of: "CryoSAMU: Enhancing 3D Cryo-EM Density Maps of Protein Structures at Intermediate Resolution with Structure-Aware Multimodal U-Nets"

Pradeep Pradeep¹

1. Electronics Engineering(VLSI Design and Technology), K. S. Rangasamy College of Technology, Erode, India

Strengths of the article are:

1. The introduction of a structure-aware multimodal network is a significant contribution to the field. Integrating structural information with 3D map features addresses a key limitation of current methods.
2. The study includes a comprehensive evaluation with various metrics, including real-space and Fourier-space correlations, and protein structure modeling assessments. The inclusion of an ablation study further strengthens the findings by demonstrating the impact of structural information.
3. The emphasis on faster processing speed is important for the practical application of cryo-EM map enhancement in structural biology research.
4. The article is generally well-written, and the figures and tables effectively present the data. The method is explained in detail, enhancing the reproducibility of the work.

To be addressed:

1. While the authors acknowledge that CryoSAMU's architecture is primarily designed to capture local information, further discussion on the specific limitations this imposes and how it might affect performance in certain scenarios would be beneficial.

2. Can you provide examples or scenarios where capturing local information might limit CryoSAMU's performance?

Declarations

Potential competing interests: No potential competing interests to declare.