Contribution ID: **226**   Type: **Oral Presentation**

SEM image segmentation based on deep learning

Wednesday, 15 May 2024 10:55 (15 minutes)

Image segmentation techniques for processing scanning electron microscopy (SEM) images can enhance the efficiency of oil and gas field exploration. This study initiates by reviewing the limitations of traditional SEM image segmentation methods (threshold-based, boundary-based and region-based), especially the challenges in processing complex structures and high-noise images. Subsequently, the basic principle of deep learning technology in image segmentation is deeply discussed, with a specific emphasis on the superiority of Convolutional Neural Network (CNN) architectures such as Fully Convolutional Networks (FCN) and U-Net in SEM image segmentation research. Finally, the challenges facing the current research are analyzed, encompassing difficulties in data annotation, the enhancement of model generalization capabilities and the processing of multi-modal SEM images. Prospects for future research directions are also put forward.

Acceptance of the Terms & Conditions

Click here to agree

Student Awards

Country

China

Porous Media & Biology Focused Abstracts

References

Conference Proceedings

I am interested in having my paper published in the proceedings.

Primary author: ZHANG, Ziyun (China University of Petroleum (East China))

Co-author: Prof. CUI, Chuanzhi (China University of Petroleum (East China))

Presenter: ZHANG, Ziyun (China University of Petroleum (East China))

Session Classification: MS10

Track Classification: (MS10) Advances in imaging porous media: techniques, software and case studies