**ABSTRACT**

Railway track detection is crucial in railway infrastructure maintenance, safety, and operational efficiency. This paper proposes a railway track detection method based on the SegNet deep learning architecture. The SegNet model is a convolutional neural network (CNN) designed explicitly for semantic segmentation tasks. By training the SegNet model on annotated railway track images, we enable it to accurately classify each pixel in the input images as either track or nontrack. The proposed method leverages the rich feature representation capabilities of deep learning to achieve robust and precise track detection, even in complex and challenging scenarios. We evaluate the performance of our approach on a benchmark dataset, considering metrics such as accuracy, intersection over union (IoU), and mean BF score. The experimental results demonstrate that our method outperforms existing track detection methods regarding accuracy and efficiency. The proposed railway track detection based on SegNet deep learning has the potential to significantly improve railway maintenance practices and enhance overall safety and operational effectiveness.