

1. Record Nr.	UNINA9910686480303321
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Titolo	Deep Learning-Based Detection of Catenary Support Component Defect and Fault in High-Speed Railways // by Zhigang Liu, Wenqiang Liu, Junping Zhong
Pubbl/distr/stampa	Singapore : , : Springer Nature Singapore : , : Imprint : Springer, , 2023
ISBN	9789819909537 9819909538
Edizione	[1st ed. 2023.]
Descrizione fisica	1 online resource (XIII, 239 p. 212 illus., 149 illus. in color.)
Collana	Advances in High-speed Rail Technology, , 2363-5029
Disciplina	006.31
Soggetti	Railroad engineering Machine learning Signal processing Quantitative research Transportation engineering Traffic engineering Artificial intelligence Rail Vehicles Machine Learning Signal, Speech and Image Processing Data Analysis and Big Data Transportation Technology and Traffic Engineering Artificial Intelligence
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Overview of Catenary Detection of Electrified Railways -- Advance of Deep Learning -- Catenary Support Components and their Characteristics in High-speed Railways -- Preprocessing of Catenary Support Components' Images -- Positioning of Catenary Support Components -- Detection of Catenary Support Component Defect and Fault -- Detection of The parameters of Catenary Support Devices based on 3D Point Clouds.

This book focuses on the deep learning technologies and their applications in the catenary detection of high-speed railways. As the only source of power for high-speed trains, the catenary's service performance directly affects the safe operation of high-speed railways. This book systematically shows the latest research results of catenary detection in high-speed railways, especially the detection of catenary support component defect and fault. Some methods or algorithms have been adopted in practical engineering. These methods or algorithms provide important references and help the researcher, scholar, and engineer on pantograph and catenary technology in high-speed railways. Unlike traditional detection methods of catenary support component based on image processing, some advanced methods in the deep learning field, including convolutional neural network, reinforcement learning, generative adversarial network, etc., are adopted and improved in this book. The main contents include the overview of catenary detection of electrified railways, the introduction of some advance of deep learning theories, catenary support components and their characteristics in high-speed railways, the image reprocessing of catenary support components, the positioning of catenary support components, the detection of defect and fault, the detection based on 3D point cloud, etc.

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