1. Record Nr.   UNINA9911018763303321

   Autore   Zhang Limao

   Titolo   Intelligent Construction in Tunnels / / by Limao Zhang, Yue Pan,
                        Penghui Lin, Mirosaw J. Skibniewski

   Pubbl/distr/stampa   Singapore : , : Springer Nature Singapore : , : Imprint : Springer, , 2025

   ISBN   981-9687-85-3

   Edizione   [1st ed. 2025.]

   Descrizione fisica   1 online resource (512 pages)

   Collana   Lecture Notes in Civil Engineering, , 2366-2565 ; ; 679

   Altri autori (Persone)   PanYue
                            LinPenghui
                            SkibniewskiMirosaw J

   Disciplina   624.19

   Soggetti   Underground construction
                        Artificial intelligence
                        Geotechnical engineering
                        Underground Engineering and Tunnel Construction
                        Artificial Intelligence
                        Geotechnical Engineering and Applied Earth Sciences

   Lingua di pubblicazione   Inglese

   Formato   Materiale a stampa

   Livello bibliografico   Monografia

   Nota di contenuto   Introduction to intelligent construction -- Intelligent Geological
                        Environment Perceptions -- Advance geological forecast -- Geological
                        feature characterization -- Geological condition detection -- Tunnel
                        face reliability modeling -- Intelligent TBM Operations -- Construction
                        equipment selection -- TBM performance prediction -- Advanced TBM
                        attitude control -- Synchronous excavation and segment assembly --
                        TBM fault detection -- Intelligent Proactive Decisions -- Tunnel line
                        alignment -- Safety risk assessment.-Risk mitigation planning --
                        Digital twin platform development -- Conclusions and future
                        directions.

   Sommario/riassunto   This book highlights the latest technologies and applications of
                        intelligent construction in the domain of tunneling works. Rapid
                        urbanization has surged the rapid development of underground
                        infrastructures in major metropolitans around the world over the past
                        decades. The development of urban tunnel systems is a challenging
                        task with high complexity in terms of design, construction, and

maintenance. Recent advancements in information and communication technologies (ICTs) have driven vast transformations around the world with successful implementations in many domains of science. Under the concept of "industry 4.0", there are many attempts at intelligent construction using the latest ICTs, where the major applications in urban system development mainly focus on building information modelling (BIM), Internet of Things (IoT), deep learning, and computer vision. A tremendous transformation has taken place in the past years with the emerging intelligent construction applications in urban tunnel development. This enables industrial participants to operate projects more efficiently and safely, not only increasing the automation and productivity in tunnel development but also enhancing construction competitiveness globally.