

3RD INTERNATIONAL CONFERENCE ON AI ML, DATA SCIENCE AND ROBOTICS

JUNE 26-27, 2023 | Mercure Roma West, Rome, Italy



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AI Goes underground: The Role of Artificial Intelligence in Revolutionizing Underground Construction

This article deals with the impact of artificial intelligence (AI) on underground constructions by a review of background studies conducted in the field of artificial intelligence applications. In this context the question arises, if data science had been able to help engineers in underground structures and can artificial intelligence technology improve the design, construction, and operation of underground structures. The challenges and limitations of traditional underground construction methods, including cost, safety, and environmental issues have to be considered. The purpose of this article is to examine the potential benefits of artificial intelligence technology in underground construction, such as: the possibility of optimizing design, reducing construction time and costs, increasing safety and improving compatibility with the environment. This method includes literature review of current studies and studies on the applications of artificial intelligence in underground construction projects. The results show that artificial intelligence technology has a significant potential to improve the efficiency and effectiveness of underground structures, especially in the field of design optimization, risk management and decision-making. The conclusion shows that artificial intelligence technology can revolutionize the practice of underground construction, but its successful implementation requires close cooperation between engineers, contractors and artificial intelligence experts. Therefore, more research is needed to explore the potential of AI technology in underground engineering and to develop guidelines, databank and standards for its integration into industrial practice.

Keywords: Underground Construction, Data Science, Artificial Intelligence, Databank, Underground Engineering

Biography:

Dr. Ghader Saadati has an executive with over 17 years of experience in geotechnical engineering for underground structures and he is a passionate about incorporating artificial intelligence and data science into my work. Currently he is pursuing PhD at the University of Innsbruck, my research focuses on utilizing deep learning and machine learning approaches to predict rock-engineering properties in underground spaces. Through his work and studies, he strives to be at the forefront of technological advancements in the field and to make a lasting impact on the industry.