Paper Presentation

TOPIC

Improving TBM-Navigation through Machine Learning

EVENT

STUVA 2023 | Munich

ABSTRACT

The standard method of determining positions uses fixed brackets mounted on the tunnel wall with an on the top installed total station. This Method includes a frequent relocation of the fixed brackets holding the total station. This leads to rehabilitation work on the bolted connections in the segment. An automatically movable total station - named "moving station" - will introduce a new stage of development to the concept of navigation systems for TBMs in large tunnel construction. The total station is mounted on the gantry of the TBM. This increases the efficiency of the TBM navigation system in terms of time, cost and personnel, as well as its safety. Initial challenges in position determination during advance could be resolved by combining sensor fusion and machine learning. This paper highlights the technical aspects of improved TBM navigation, including its benefits as well as limitations, and provides a case study of how it was already used in projects before.

DATE

09.11. | 11:15 AM

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