## عنوان مقاله:

A meta model for simulation-based steering of the tunneling process using actual geological conditions

## محل انتشار:

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## خلاصه مقاله:

For a tunnel built under complex geological conditions with shallow-buried and high-weathered soft rock, the rock wall can quickly become unstable. In addition, special geological conditions can cause serious damage or deformation to construction areas thereby threatening the safety of tunnel workers. In this paper, a new method for the simulation supported steering of the mechanized tunneling process in real time during construction is proposed. To enable real-time predictions of tunneling induced surface settlements, meta models trained a priori from a comprehensive process-oriented computational simulation model for mechanized tunneling for a certain project section of interest are introduced. For the generation of the meta models, Artificial Neural Networks (ANN) are employed in conjunction with Ant Colony Optimization (ACO) for the model update according to monitoring data obtained during construction and for the optimization of machine parameters to keep surface settlements below a given tolerance

## کلمات کلیدی:

Neural networks, Ant Colony Optimization, Mechanized tunneling, geological