

Research on LSTM-based Model for Predicting Deformation of Tunnel Section During Construction Period

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Abstract—In order to ensure the smooth construction of highway tunnel construction project, it is necessary to monitor and analyze the tunnel deformation. Most of the existing monitoring systems at home and abroad are for independent projects or independent equipment monitoring, the system application scope is small, and the data processing is not perfect. Based on this, this paper takes the tunnel deformation monitoring during highway tunnel construction as the research object, and adopts LSTM to predict the tunnel section deformation. The short-duration memory neural network model can learn from memory and then predict the subsequent information. After establishing the neural network model, the model parameters such as learning rate, number of hidden nodes, number of iteration steps and unit input are tested and adjusted by comparative experiment, and the best fitting effect is obtained at last. The tunnel prediction model can predict the deformation of tunnel section in real time, and has high precision. At the same time, it can leave enough reaction time for construction personnel. It can be predicted that it has good development potential in the future.

Keyword—Tunnel Deformation, Deformation Prediction, Model Testing, LSTM Model, Model Evaluation



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