Discussion on “Prediction of ground vibrations resulting from the blasting operations in an open-pit mine by adaptive neuro-fuzzy inference system” by Melih Iphar, Mahmut Yavuz, and Hakan Ak

Yavuz Karsavran

Received: 19 June 2008 / Accepted: 8 July 2008 / Published online: 2 August 2008
© Springer-Verlag 2008

The discussor appreciates the authors for trying to estimate the peak particle velocity (PPV) using the adaptive neuro-fuzzy inference system (ANFIS), where the estimated PPV values are compared with the regression method (RM) results. However, the discussor wishes to present the following points for further enhancement and care:

1. In this research, the RM has been used without checking the restrictive assumptions such as normality, means of conditional distributions, lack of measurement error, homoscedasticity, linearity, and autocorrelation (Şen 1998; Erdik 2008). None of these six restrictions can be ignored, otherwise the RM cannot be reliable in the predictions.
2. In their research, 44 data values have been used to predict PPV values. However, some of the data such as the ones in rows 8–9 in Table 2 are the same. It is, therefore, more logical to exclude one of these data in order to conduct more reliable model.
3. Figure 8 shows the results of ANFIS model for all 44 data. However, both testing and training performances of ANFIS model should have been demonstrated.
4. In the some researches, the training data set covers 35 data (80%) and the remaining is used for the testing phase. Testing data are scarce according to Haykin (1999), who recommends to keep one-third of the total data. Otherwise, the results will not be so reliable.

References

- Erdik T (2008) Discussion on “prediction of ground vibrations resulting from the blasting operations in an open-pit mine by adaptive neuro-fuzzy inference system”. Environ Geol. doi: [10.1007/s00254-008-1321-1](https://doi.org/10.1007/s00254-008-1321-1)
- Haykin S (1999) Neural networks: a comprehensive foundation. Macmillan College Publishing Company, New York
- Şen Z (1998) Fuzzy algorithm for estimation of solar irradiation from sunshine duration. Solar Energy 63(1):39–49

Y. Karsavran (✉)
Hydraulics Division, Faculty of Civil Engineering, Istanbul
Technical University, Maslak, 34469 Istanbul, Turkey
e-mail: karsavran@itu.edu.tr