“Gut instinct” of the standard penetration test (SPT) is predictable with machine learning

Yoshiyasu Takefuji

Artificial neural network including deep learning is a simplified mathematical model which may be resembled but is not exactly the same as real bio-system. Taking advantage of “machine”, the machine system can be trained without rest not-like human beings. In the machine learning, the level of human expert training can be achieved within less than a month. Matthew Hutson mentioned “basic instincts” (1). We have been challenging to “gut instinct” using ensemble machine learning for building an AI drilling-machine. Experts of drilling may be able to control a drilling machine by using several parameters. Actually more than 20 parameters are available in a drilling machine. Experts must understand the features of the drilling soil for controlling. The value of the standard penetration test (SPT) indicates how hard the drilling soil is. After machine learning using several thousand data, “gut instinct” of SPT is predictable with more than 90% accuracy in the AI system.

References:

1. Matthew Hutson, “basic instincts,” Science 25 May 2018: Vol. 360, Issue 6391, pp. 845-847