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Keynote Lecture

Bringing Information Technology into Geotechnical Engineering Practice - Concept and Development

ABSTRACT

The use of information technology (IT) in a variety of engineering fields is increasing in order to expedite routine engineering design procedures. In geotechnical engineering fields, in particular, IT has been extensively used to predict, visualize, and analyze physical parameters. In this paper, examples on the combined technique of IT and numerical analysis for routine geotechnical design projects are presented, mainly for tunnel design and soft ground improvement works. Illustrative examples of the ways in which IT can be integrated into routine geotechnical design using the artificial neural network (ANN) technique and numerical analysis are presented. Also introduced is a combined technique that couples the geographical information system (GIS) and generalized ANNs for use in routine geotechnical design works. Recently developed a CAD-based pile design concept is also presented. This paper presents the concept of the developed methodology together with its implementation to a number of tunnel and soft ground improvement, and pile design projects.

THE SPEAKER



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Research Interests: Tunnelling and Deep excavation, Geosynthetics, Unsaturated soil, Numerical simulation of geostructures, Use of large-scale computing in geotechnical engineering, Integration of IT into routine geotechnical design.

Professor Chungsik Yoo is a Professor of Civil and Environmental Engineering at Sungkyunkwan University in Korea. He obtained his Ph.D. in Civil Engineering from the Pennsylvania State University in 1993. He worked as a Geotechnical Engineer at Mueser Rutledge Consulting Engineers in USA and subsequently became a faculty member at Sungkyunkwan University in 1994. Prof. Yoo is the recipient of 2010 IGS Award from the International Geosynthetic Society and has co-authored over 150 technical papers in geotechnical engineering based on laboratory testing, numerical modeling, and field testing. He is currently an Executive Council member of International Geosynthetics Society, Korean Tunnelling Association, Korean Geotechnical Society, and Korean Geosynthetic Society. He is also serving as an Editorial Board Member for Geotextiles and Geomembranes and Computers and Geotechnics. Prof. Yoo is the Vice Animateur of Working Group "Research" of International Tunnelling Association and the Vice Chair for TC204 of ISSMGE.