



SCHOLARLY PUBLICATIONS
School of Civil Engineering
KIIT Deemed to be University

Journal Name: Geotechnique

IF: 5.2

Title: Effect of variable strain rate on stress-strain behaviour of saturated clay

Author: Nanda S.; Sivakumar V.; Nanda P.; Mackinnon P.

Details: 2025

Abstract: This paper presents the results of laboratory investigation on variable strain rate effects of soils deformed under undrained conditions. Consolidated undrained triaxial tests were conducted under two categories with: (a) a constant strain rate control and (b) a variable strain rate control. In the constant strain rate control tests, the strain rate remained constant throughout the shearing, whereas in the variable strain rate control tests, the strain rate varied from 50 mm/s to 0.0007 mm/s during the shearing. Tests were carried out at initial effective confining pressures of 100 kPa, 200 kPa and 400 kPa. It was observed that the peak deviator stress increased and pore water pressure decreased with an increase in strain rate. However, this trend became reversed at a higher strain rate such as 70 mm/s. The stress-strain behaviour under variable strain rate control tests showed the tendency of soils to switch to a different stress-strain path as the strain rate changed. Two new parameters, k_u and k_σ , were introduced to express the change in excess pore water pressure and effective normal stress with strain rates. An approximate procedure sensitive to strain rate has been developed to predict the stress-strain behaviour of soil under undrained conditions.



URL: <https://www.scopus.com/pages/publications/105009863140>





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Journal Name: Aquacultural Engineering

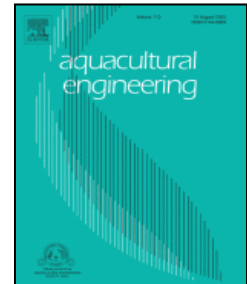
IF: 4.3

Title: Application of artificial intelligence in aquaculture – Recent developments and prospects

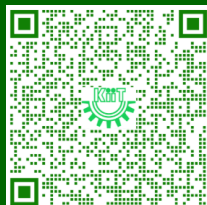
Author: Roy S.M.; Beg M.M.; Bhagat S.K.; Charan D.; Pareek C.M.; Moulick S.; Kim T.

Details: Volume 111, 15 October 2025, Article number 102570

Abstract: Artificial intelligence (AI) offers innovative and efficient solutions to contemporary challenges in sustainable aquaculture. Machine learning (ML) and deep learning (DL) are integral components of smart aquaculture, driving significant advancements in the field. The integration of AI with ML, and DL technologies is transforming traditional aquaculture practices by enhancing operational efficiency, optimizing fish health management, improving environmental conditions, monitoring water quality and supporting advanced decision-making processes. This review highlights the latest applications of AI, including ML, and DL in aquaculture, emphasizing their roles in real-time water quality monitoring, disease detection, and automated estimation of fish biomass etc. Key techniques, including predictive modeling, image and video processing, and sensor data integration, are enabling these breakthroughs. Moreover, DL algorithms, such as convolutional neural networks (CNNs) and long short-term memory (LSTM) networks, have emerged as powerful tools for processing complex data and predicting critical events within aquaculture systems. Despite the notable progress, challenges such as the need for large, labeled datasets, high computational costs, and issues related to model interpretability continue to limit broader adoption. The current review aims to offer researchers and practitioners with a comprehensive overview of AI and its subfields such as ML and DL applications in smart aquaculture, discussing both the opportunities and challenges while suggesting future research directions to overcome existing limitations and expand AI-driven innovations in the industry.



URL: <https://www.sciencedirect.com/science/article/pii/S0144860925000597?via%3Dihub>





SCHOLARLY PUBLICATIONS School of Civil Engineering KIIT Deemed to be University

Journal Name: International Journal of Pavement Engineering

IF: 3.3

Title: Experimental investigation on mechanical and fatigue characteristics of cement-treated coal mine overburden materials

Author: Mohanty M.; Beriha B.; Biswal D.R.; Mohapatra S.S.

Details: Vol. 26, Issue 1, August 2025

Abstract: Coal is the main energy source for producing electricity and the most commonly used fossil fuel globally. Significant waste is generated at every stage of the life cycle of coal, including mining, processing, and utilisation. Waste materials generated during open-cast coal mining are commonly termed overburden (OB). Because of low calcium oxide (CaO) content, natural binding cannot be anticipated in these wastes. Therefore, the current study aims to assess the effectiveness of cement-treated OB (CTOB) materials in the subbase or base layer of roads, which will address the concerns associated with depleting aggregates and waste disposal. For bound materials, the tensile characteristic is considered as an important parameter. In the present research tensile strength of CTOB mixes has been assessed through indirect tensile strength and four-point bending tests. The cyclic four-point bending and indirect tensile tests have also been conducted under a stress-controlled environment to evaluate the flexural modulus and indirect tensile resilient modulus of CTOB mixes. Additionally, the laboratory flexural fatigue life has been evaluated for CTOB mixes, and stress and strain-dependent flexural fatigue equations have also been proposed.



URL: <https://www.tandfonline.com/doi/full/10.1080/10298436.2025.2540075>

