SCHOLARLY PUBLICATIONS
School of Civil Engineering
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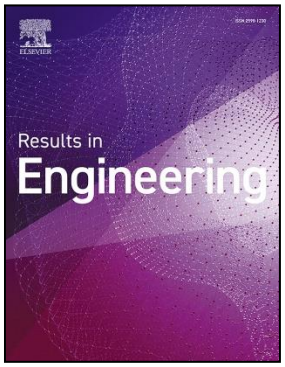
Journal Name: Results in Engineering **IF: 7.9**

Title: A deep learning-geospatial analytics fusion framework for predicting land use land covers dynamics in eastern region of India

Author: Nandi, D.; Thakur, R.R.; Bera, D.K.; Pati, A.K.; Mishra, P.; Alshehri, F.; Zhran, M.

Details: Volume 29, March 2026

Abstract: Globally, rapid urbanisation and unregulated urban expansion have driven widespread land use and land cover (LULC) changes, resulting in deforestation, loss of vegetation, and depletion of water bodies. In India, cities and peri-urban areas are experiencing similar transformations, making it essential to monitor and manage urban growth effectively. This study aims to analyse LULC changes in Berhampore, West Bengal, from 2001 to 2023, identify key drivers of urban expansion, and predict future land use for 2033 using remote sensing, GIS-based spatial analysis, and deep learning techniques (ANN and CA models). The results show a sharp increase in built-up areas from 20.39 sq. km (2001) to 43.85 sq. km (2023), leading to significant reductions in vegetation (-52.13 sq. km) and water bodies (-1.74 sq. km). Forecast for 2033 shows continued urban development where agricultural territories represent sixty-two percent of the land while forests face a fifty percent reduction thus boosting risks of biodiversity depletion along with enhanced flood potential. This research proves that land sustainability policies and green infrastructure planning combined with strategic urban strategies must urgently develop to balance development with environmental endurance. This research shows that ANN and CA operate as predictive methods to enhance LULC accuracy by helping administrators execute measurement policies. This study incorporates deep learning architecture parts that integrate CNNs and LSTMs to establish advanced LULC modelling frameworks which excel at spatial-temporal pattern detection. Future research on urban growth prediction will benefit from the proposed structures built to improve predictive models by integrating hierarchical features based on long-term dependency according to academic publications.



URL: https://www.sciencedirect.com/science/article/pii/S2590123026002446?via%3Dihub

SCHOLARLY PUBLICATIONS
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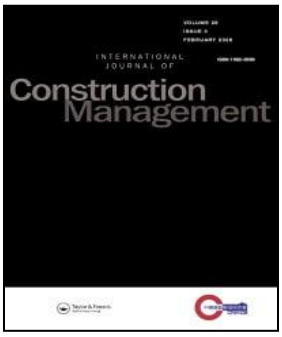
Journal Name: International Journal of Construction Management **IF: 3.4**

Title: AI-powered delay risk prediction in construction projects: leveraging machine learning, deep learning and hybrid models

Author: Sahu, P.; Bera, D.K.; Parhi, P.K.; Kandpal, M.; Thakur, R.R.

Details: 2026

Abstract: Construction work delays are a long-term challenge resulting in schedule changes, budget conflicts and dissatisfaction. Traditional time management techniques struggle to address complex project relationships and uncertainties in contemporary construction projects. AI-based methods including machine learning (ML), deep learning (DL) and hybrid models are being used for foreseeing delays proactively. The study aims to estimate the abilities of advanced AI models to forecast construction delay percentages by using real-time data from 68 different construction projects in India. A dataset was prepared by collecting data on delay factors involving varous stakeholders and project attributes through a structured survey. Data quality was enhanced through pre-processing methods including interpolation, outlier detection and removal, normalization and feature selection. The research developed a predictive model that integrates a convolutional neural network (CNN) with a bidirectional long short-term memory (BiLSTM) network, joining spatial and temporal feature extraction for improved accuracy. This CNN–BiLSTM hybrid model outperformed multiple AI frameworks, achieving the highest accuracy (95.56%) and F1-score (95.58%), indicating its effectiveness in capturing spatial dependencies and sequential patterns in delay-related data. Research shows that combined DL algorithms surpass single-model ML and DL applications in delay predicting, allowing construction professionals to make informed project plans and minimize risks.



URL: https://www.tandfonline.com/doi/full/10.1080/15623599.2026.2619678