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## Toward Industry 4.0 – The Application of Digital Technologies in Construction

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Industry 4.0, also called the Fourth Industrial Revolution, is transforming the processes of designing and managing construction projects. The evolution of digital technologies, such as Artificial Intelligence (AI), intelligent automation, the Internet of Things (IoT), and supply chain integration, offers great potential to lower costs and enhance profitability, efficiency, safety, and security throughout the project lifecycle, ushering in the era of Construction 4.0 (Abioye et al., 2021; Cuellar et al., 2023; Turner et al., 2021). This issue presents nine peer-reviewed papers that emphasize the application of technological advancements in digitizing the construction industry and construction business. For example, this collection introduces an automated tool specifically designed to compare earthmoving productivity for excavation operations (Panas et al., 2024). In addition, deep learning is employed to develop the new algorithmic model using an ultrasonic rebound enhancement method to improve the accuracy and robustness of concrete damage detection (Zhao, 2024) and an estimation of the potential costs and benefits of deep learning applications, specifically the Artificial Intelligent Internet of Things image sensors (AIoT-IS), for construction safety monitoring, is included in this issue (Wang et al., 2024). Applied in the area of transportation construction, geographical information systems (GIS) big data, neural networks, and remote sensing are investigated for intelligent information services for ship pilotage ports (Ren, 2024) and port infrastructure monitoring and condition assessment (Tsaimou et al., 2024). Additionally, a brainstorming algorithm is developed to achieve a low-carbon y 4567o-p56lr7tdyfxgcveconomy in urban solid waste logistics management, aiming to drive sustainable development (Jiang, 2024). Not only this, the issue includes an overview of pipeline project issues in the New Zealand construction industry (Moshood et al., 2024) and assesses the adoption of smart warehouse technology in Thailand (Chayutthanabun et al., 2024), providing an overall picture of the application of advanced automatic systems in construction across various countries. Recognizing the importance of digital technologies in construction, integrating Industry 4.0 concepts into Civil Engineering education offers an overview of the multidisciplinary capstone design course in the civil engineering curriculum and highlights relevant practices, presented in the research of Alhorani et al (2024).

As the adoption of digital technologies in construction is still at an early stage, the nine papers covered in this issue provide a better understanding of the transformation and are hoped to lay the groundwork for future research in this domain. Finally, we would like to acknowledge and appreciate the support and cooperation from all reviewers, organizers, authors, and sponsors for their time and effort in bringing these articles together for the current issue.

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