REFERENCES

1. Construction Activity Analysis of Workers Based on Human Posture Estimation Information Xuhong Zhou, Shuai Li, Jiepeng Liu, Zhou Wu, Yohchia Frank Chen
2. Slaton T, Hernandez C, Akhavian R. Construction activity recognition with convolutional recurrent networks. Autom Constr 2020;113:103138.
3. Kelm A, Laußat L, Meins-Becker A, Platz D, Khazaee MJ, Costin AM, et al. Mobie passive radio frequency identification (RFID) portal for automated and rapid control of personal protective equipment (PPE) on construction sites. Autom Constr 2013;36:38–52.
4. Cheng T, Teizer J, Migliaccio GC, Gatti UC. Automated task-level activity analysis through fusion of real time location sensors and worker'sthoracic posture data. Autom Constr 2013;29:24–39.

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APPLICATION OF INNOVATIVE CONSTRUCTION TECHNOLOGIES IN THE RESTORATION AND RECONSTRUCTION OF HISTORICAL BUILDINGS

In the restoration and reconstruction of historical buildings, the application of innovative construction technologies plays a crucial role in preserving the nation's history and ensuring the efficient preservation of these valuable structures.

The integration of innovative technologies such as HBIM (Historic Building Information Modeling), IOT (Internet of Things), and digital technologies is essential for achieving resilience and sustainability in the preservation process [1]. The main purpose of restoration projects is to carry cultural heritage monuments into the future with minimum changes to their structures and characteristics. This presents a significant challenge, as these unique buildings require innovative construction ideas for restoration that minimize alterations to their original form and characteristics [2].

In the practical techniques for restoration of architectural formation elements, various methods such as architectural simulation, reconstruction, disassembly & reassembly, reinforcement, and cleaning are utilized, demonstrating the significant role of new technology in restoring old buildings [3].

The application of digital technologies for the restoration of historic buildings has been emphasized, with the aim of optimizing the restoration process and identifying new possible applications of such techniques. This includes the use of 3D stereoscopic technology and virtual reality for the digital restoration of ancient buildings, providing viewers with an immersive experience of roaming through the disappearance of ancient buildings and experiencing their construction style, history, and culture [4].

Furthermore, the application of BIM (Building Information Modeling) technology has been highlighted for its significance in promoting information integration and collaboration in historical reconstruction, emphasizing the importance of information technology for modeling, design, and archive in historical restoration projects [5].

In conclusion, the application of innovative construction technologies such as HBIM, IOT, digital technologies, 3D stereoscopic technology, virtual reality, and BIM plays a crucial role in the restoration and reconstruction of historical buildings, ensuring the preservation of the nation's history and cultural heritage while embracing resilience, sustainability, and efficient preservation processes.

REFERENCES

1.N.M. Elabd, Y.M. Mansour, L.M. Khodier Developments in the Built Environment. Volume 8, September 2021, 100058. Utilizing innovative technologies to achieve resilience in heritage buildings preservation. URL: https://www.sciencedirect.com/science/article/pii/S266616592100017X

2.B. Okten, M. Okten. The Need for Innovation in Historical Building Restoration Projects. June 2018.URL:https://www.researchgate.net/publication/326993420_The_Need_for_Innovation_in_Historical_Building_Restoration_Projects

3.M. Anwar. World Journal of Engineering and Technology. Practical Techniques for Restoration of Architectural Formation Elements in Historical Buildings. January 2019. URL: https://www.researchgate.net/publication/331093869_Practical_Techniques_for_Restoration_of_Architectural_Formation_Elements_in_Historical_Buildings

4.Marinos Ioannides, Eleanor Fink, Antonia Moropoulou, Monika Hagedorn-Saupe, Antonella Fresa, Gunnar Liestøl, Vlatka Rajcic, Pierre Grussenmeyer. Digital Heritage. Progress in Cultural Heritage: Documentation, Preservation, and Protection. Application of Digital Technologies in the Restoration of Historic Buildings and Heritage Objects. 2016.
URL: https://link.springer.com/chapter/10.1007/978-3-319-48974-2_16

5.Le Yan, Dong Kai, Li guang fan. Applied Mechanics and Materials - Details. The Application of BIM in the Restoration of Historical Buildings. 2014. URL: https://www.scientific.net/AMM.638-640.1627

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SAFETY AND POTENTIAL HAZARDS IN HYDROTECHNICAL STRUCTURES

Hydrotechnical structures play a crucial role in managing water resources, providing flood protection, and supporting various industrial and agricultural activities. However, ensuring the safety of these structures is paramount to prevent potential hazards and safeguard both human lives and the environment.

Safety in hydrotechnical structures is a multifaceted concern that involves the careful consideration of design, construction, maintenance, and emergency response. The consequences of failure in these structures can be catastrophic, leading to loss of life, property damage, and environmental degradation.

Understanding and recognizing potential risks associated with hydrotechnical facilities is a critical step in ensuring their safety. These risks may include structural failures, overtopping, erosion, seismic events, and environmental impacts. Thorough risk assessments are essential to identify vulnerabilities and implement effective mitigation measures.

Adherence to international safety standards and regulations is a cornerstone of ensuring the safety of hydrotechnical structures. Compliance with established guidelines helps engineers and stakeholders navigate the complexities of designing and managing these facilities while minimizing risks [1].

Regular inspection and maintenance are vital for ensuring the structural integrity of hydrotechnical structures. Neglecting routine checks and necessary repairs can lead to gradual deterioration, compromising the overall safety of the facility. Case studies illustrating the consequences of inadequate maintenance underscore the importance of proactive care.

Developing comprehensive emergency preparedness plans is essential to respond effectively to unforeseen events. Training programs for personnel, simulation exercises, and the establishment of communication protocols contribute to a swift and coordinated response in times of crisis.