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Artificial Intelligence (AI) Transforming Construction Industry for Improved Efficacy

Starting from building design, bidding & procurement to operations & model transformation, AI facilitates AEC professionals throughout the facility lifecycle.

WASHINGTON DC, DISTRICT OF COLUMBIA, USA, December 6, 2021 /EINPresswire.com/ -- The Construction Industry is working with progressive technologies like Artificial Intelligence (AI) for efficiently executing construction jobs. According to the Research conducted by 'Construction Business Owner', AI expense is anticipated to cross $4.5 billion by 2026, with the potential of

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enhancing profits to 71% by 2035.

> Acting as smart assistants shifting through the mound of project data, AI & ML help AEC team in identifying risk variables for safe construction.”
>
> *Sukh Singh*

- Safety concerns
- Cost consumption
- Schedule overrun

Starting from building design, bidding, financing & procurement to construction, operations, asset management to business model transformation, AI facilitates AEC professionals throughout the facility lifecycle.

Artificial Intelligence in construction helps to overcome some of the major difficulties including:

- Labor shortages

Sukh Singh, the V.P. Tejjy Inc. stated: “Technologies like Artificial Intelligence and Machine Learning have a great potential in the AEC sector. The applications successfully resolve issues, enabling everyone to be more productive and focused on work-related conversations. Acting as

smart assistants shifting through the mound of project data, like change order management and dealing with thousands of RFIs, the technologies help AEC team in identifying significant risk variables for safe construction."

Applications of AI in the construction industry:

• Preventing Over-all Project budget by AI:

Irrespective of the best project teams, most projects go beyond the budget. Several AI-empowered software applications facilitate in anticipating cost overruns based on parameters like:

- Size of the project
- Type of the contract
- Competence of project manager

Predictive models also use historical data such as start & end dates for making realistic timetables for future projects. As a result, less time is required for onboarding new project professionals and faster project completion.

• Improvising building design through BIM:

Building Information Modeling involves the technique of generating a data-rich 3D model to facilitate:
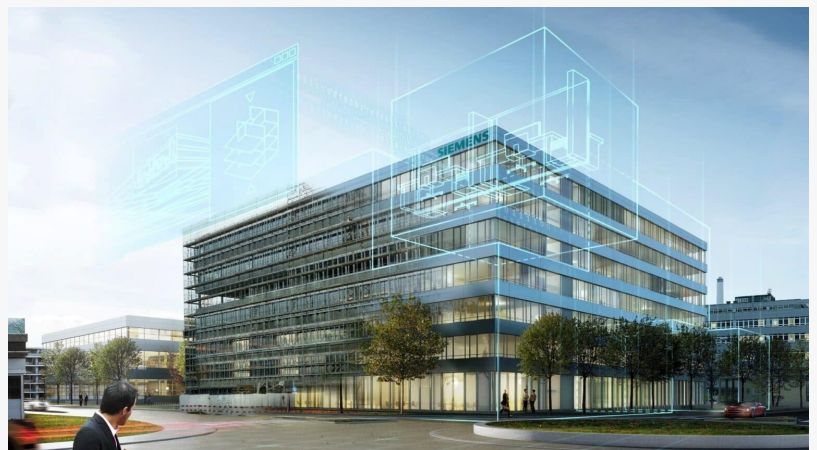
- Designers
- Architects
- Engineers
- Modelers

4D BIM Integrated AI for Construction

Engineering Design Build Process

Pre-construction Planning with AI

- Drafters

Whether it's planning, designing, building or managing buildings, AI technology helps AEC professionals in building the apt project infrastructure, facility maintenance, and operations. The 3D models should be considered with regards to architectural, engineering & MEP plans for planning and designing the building project. The collaboration amongst team members is essential for accurate clash detection and resolving conflicts during the preconstruction stage, leading to successful completion of construction project.

Reviewing Facilities Management & Maintenance with AI

•Improving risk management:

No construction project is free from risk, taking several forms, like quality, safety, timeliness, and cost. Several subcontractors work on different disciplines on the construction sites simultaneously. Hence, a bigger project involves a higher amount of construction risk. Nowadays, GCs employ AI and machine learning technologies for monitoring and prioritizing risk on the site, enabling the project team to spend their limited time and resources on critical risk variables. AI helps to find out issues, after which construction project managers collaborate with the team for minimizing risk by assigning a risk score to subcontractors.

•Building a productive job-site:

Several construction companies provide self-driving AI-powered construction machinery for executing project operations efficiently like:

- Welding
- Demolition
- Bricklaying
- Pouring concrete

Excavation is done by autonomous bulldozers with a human programmer for making a specified job site. This reduces human labor for the sake of actual construction and minimizes the overall time consumption of the project. Further, project managers could monitor job sites in real-time, reviewing workers' productivity and processing compliance through facial recognition, Unmanned Aerial Vehicles, Drones, etc.

- Enhancing project safety:

As per the report generated by Occupational Safety & Health Administration (OSHA), the prime cause for death in construction is from 'falls'. As per 2018 BLS data, there were over 320 fatal falls, out of 1008 fatalities. If proper safety measures would have been taken, the risks could have been avoided. AI in construction facilitates enhancing project safety, by identifying hazards on the site.

- Integrating big-data in construction:

Artificial Intelligent systems are susceptible to an infinite quantity of data for developing data every day. Every construction site is a possible data source for artificial intelligence. Data collected from BIM, drones, mobile device photos, onsite security sensors, and other sources are easily integrated with AI and machine learning systems for easy identification and overview.

- Reviewing building maintenance & operation:

Building managers can use AI, long after the construction work gets completed. Advanced analytics along with AI-powered algorithms produce useful operational insights and gauge the performance of infrastructural projects like bridges, roads and almost anything in the built environment. Using drones, Laser Scanners, sensors, and other wireless technologies, Artificial Intelligence tracks project progression, identifying issues for preventative maintenance for utmost security and safety.

Benefits of AI in Construction Management:

- Support during the Design Development Stage:
- Generate complicated building designs
- Enter diverse design goals & criteria
- Accurate Cost Estimation:
- Create early cost & schedule estimation
- Accurate construction estimation in less time
- Onsite Safety Management:
- Effective risk monitoring & prevention
- Identify workers & incidents violating safety protocols.

Tips for Implementing AI in Construction Management:

Artificial intelligence (AI) is a powerful technology, which is easily accessible to anybody with a computer and internet access. Due to the blend of power and accessibility, people implement strict ethical standards. Few tips for implementing AI in construction include:

- Enabling human supervision for informed decisions & promoting their rights
- Working with secure technology for avoiding unintended injury
- Ensuring privacy & data governance with data integrity and quality
- Enhancing transparency engaging with AI systems
- Considering the welfare of society & the environment
- Accountability for the evaluation of algorithms, data & design processes

Read more on "[4D BIM Integrated with AI to Support Commercial Construction Project](#)"

Future of AI in Construction:

As per the survey conducted by McKinsey, asset productivity gets enhanced to 20%, reducing the overall cost of maintenance to about 10%" Using AI as well as Internet of Things, engineers could successfully monitor the work progress. In modern structures, artificial intelligence could be used for planning the routing of electrical & plumbing systems.

Plan your business efficiently with Artificial intelligence (AI) and track real-time interactions of AEC professionals, machinery, and materials on the construction site. Use AI to warn supervisors about productivity, construction errors, and safety hazards. It's a fact that AI would not be able to completely replace the human workforce but could revolutionize the business models of the AEC industry. So, implement AI and enhance the efficiency of construction operations.

Tejjy Inc. is an early adopter of AI-integrated Virtual Reality, Augmented Reality, Drone & [3D Laser Scanning technology for the AEC professionals in USA](#). With multiple locations in the USA such as Maryland, DC & Alaska, expert BIM professionals are serving over 2500+ happy clients for 15+ years.

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