NEMETSCHEK
GROUP

Jun 02, 2021 08:04 UTC

Artificial Intelligence: On the Verge to Disrupt and Transform the Building Life Cycle

Don Jacob, VP Technology Build & Construction Division at the Nemetschek Group, discusses the relevance of AI for the building lifecycle:

Artificial intelligence (AI) is set to become an integral part of the construction process. With Building Information Modeling (BIM) extending further across the project lifecycle, the shift to data-driven design and construction is resulting in increasing amounts of data being generated in all phases of a project. Stakeholders throughout the design and build value chain are spending more and more of their time as information managers attempting to

organize and synthesize the meaning of this information. AI and machine learning (ML) techniques are proving to be powerful tools to maximize the value and realize potential of data to drive timely decisions faster, impacting architecture, engineering, construction, and building operations.

Delivering more with data

Data is the fuel that powers AI. Using historical information, machine learning can forecast future results based on past performance, identify patterns, and generate new insights in ways never before imagined. Planning and design are already benefiting from advanced software tools – like those provided by the Nemetschek Group – which help identify rule-based clashes between models, create accurate construction simulations and schedules, and increase the efficiency of the design stage. AI has introduced methodologies such as generative design, creating thousands of options in a fraction of the time which are then refined by the designer to meet client requirements. In the future, the use of AI in design will help to automate traditionally manual tasks, providing assistive technology that enables design and planning to be faster, higher quality, and cost-optimized. The need to deliver projects successfully with fewer resources has driven the need to leverage the insights that AI and machine learning provides.

Maximizing the utilization of available resources is also an important theme for both project managers and construction site staff. The AEC industry has historically grappled with time and cost overruns, particularly as projects have become larger and more complex. AI – coupled with site monitoring data such as photos, video, and field sensors – holds a key to overcoming these challenges, improving project monitoring and risk management. By identifying common patterns that lead to problems and alerting project managers, corrective action can be taken sooner, before issues become critical and impact progress. Similarly, risks identified and prioritized by AI systems help teams focus resources on the most critical issues. And most importantly, safety risks can be better identified and mitigated in almost real-time to prevent issues before they happen.

Increasing efficiency for a more sustainable building process

On most projects, coordinating the large amounts of workers, materials, and machinery presents significant logistical and scheduling challenges. Here, too, is where AI has the power to fundamentally impact site coordination.

Planning site deliveries and sourcing materials are areas that will see significant improvements as more efficient routes, loading patterns, and inventory management are offered by AI solutions. Downtime will be minimized and managed effectively as resource utilization will be better planned for material tracking and equipment utilization. This trend continues downstream to materials suppliers and equipment manufacturers, who will optimize their quality control, procurement, inventory management, pricing, and delivery systems by integrating AI into their processes. As the management and monitoring of the construction process is particularly complex, AI will provide substantial benefits in this area.

While efficiency has been the main driver for AI in the construction industry, there is an increased focus on the end user's requirements and the desire for more sustainable buildings. Once a project is completed, AI continues to offer advantages throughout the asset's operation. Sophisticated facilities management systems that integrate information from internet-enabled sensors and other data capture equipment are rapidly becoming commonplace.

No other emerging technology has the potential to disrupt and transform the entire building life cycle to the extent that AI will. With data playing an increasingly important part of the design, construction, and operation process thanks to BIM, leveraging the power of AI to enhance efficiency even further and meet user demands is the next logical step in the evolution of the AEC/O industry.

About the Nemetschek Group

The Nemetschek Group is a pioneer for digital transformation in the AEC/O industry. With its intelligent software solutions, it covers the entire lifecycle of building and infrastructure projects and guides its customers into the future of digitalization. As one of the leading corporate groups worldwide, the Nemetschek Group increases quality in the building process and improves the digital workflow of all those involved in the building process. This makes it possible to design, build and manage buildings with greater efficiency, sustainability and environmental compatibility in terms of resources. The focus is on the use of open standards (OPEN BIM). The portfolio also includes digital solutions for visualization, 3D modeling and animation. The innovative products of the 15 brands of the Nemetschek Group in the four customer-

oriented segments are used by approximately six million users worldwide. Founded by Prof. Georg Nemetschek in 1963, the Nemetschek Group today employs more than 3,000 experts.
Publicly listed since 1999 and quoted on the MDAX and TecDAX, the company achieved revenue amounting to EUR 596.9 million and an EBITDA of EUR 172.3 million in 2020.

Contacts

Ulrike Beringer
Press Contact
Senior Director Group Communications & Corporate Responsibility
uberinger@nemetschek.com
+49/162 2625459