Innovate with AI

We look forward to having you join us on September 11th for the Society of Facade Engineering North America Hub Fourth Annual Forum: **Innovate with AI.** To help familiarize yourself with the topic, please see the pre-reading below. As professionals within the AEC industry today, we are in a unique position to explore how artificial intelligence is reshaping the way we design, construct, and maintain buildings. By deepening our understanding of the capabilities, risks, and potential of artificial intelligence, we can discover opportunities to integrate the rapidly evolving world of technology into the future of our built environment.

What is Artificial Intelligence?

Artificial Intelligence (AI) is a technology that enables computers and machines to perform tasks that typically require human intelligence. These tasks include learning from data, comprehension, recognizing patterns, problem-solving, decision-making, autonomy, and generating creative outputs. Today, AI plays an important role in automation and data processing across many different industries

The architectural, engineering, and construction (AEC) industry is projected to reach a global market value of $16.3 trillion in 2025.[1] This substantial figure highlights the importance of optimizing performance in this industry through every step of design, construction, and operation. The emergence of AI introduces capabilities to achieve optimization through innovation and expedited workflow; however, further collaboration and pursuit are required to maximize its potential.

💡 *Have you seen or used any tools that incorporate AI in your projects or workflow?*

Implementation in Industry

The AEC industry has historically been slower in adopting new technological advancements and innovations, with lower investments in research and development than other industries. Multiple factors contribute to this slow rise, including but not limited to the industry's fragmented nature (with a wide range of stakeholders such as architects, engineers, contractors, consultants, owners, suppliers, etc.), the complexity and uniqueness of each project that limits standardization, and the cost-sensitive nature that results in less investment toward research and development.

However, the use of AI has grown and become more common within all facets of this industry. A survey of architects, engineers, and city planners showed that 36% of professionals rely on AI / AI tools on a daily basis (an additional 31% indicated using them every few days), with the most common technologies used including generative AI, large language models, and

[1] https://openasset.com/resources/ai-in-aec/

machine-learning-based data analytics and insight.[2] AI can also play a role in construction, such as through real-time site monitoring that can detect potential hazards through image recognition and sensors - alerting personnel and collecting information to proactively enhance safety standards and mitigate risks. Other applications can also include predictive maintenance, automated machinery, and management of resources.

Despite the increased adoption of AI, there are roadblocks to its further implementation. Last year, a survey of 400 technology decision-makers at AEC firms across multiple countries indicated that the main challenges they've experienced of implementing digital tools such as AI include lack of training or technical skills among staff, integration issues with existing systems, resistance to change within the organization, and concerns about data security and privacy.[3] There is also a high cost associated with the implementation of AI - it requires a high initial investment for software, hardware, and in-demand and expensive skilled personnel that can collaborate across the technological / software and AEC disciplines. Additionally, it requires further investment to develop and standardize the fragmented data sources (i.e., BIM models, site reports, contract documents, etc.), which is also further complicated due to the unique and custom nature of each project, increasing the risk and timeline of the ROI.[4]

💡 *What are the potential risks of implementing AI that we should be cautious of?*

💡 *What are potential solutions to the roadblocks of implementing AI in the AEC industry?*

We look forward to engaging with you on this important topic, and discussing the transformative role that artificial intelligence plays today and in the future.

[2] https://www.arup.com/en-us/insights/embracing-ai-reshaping-todays-cities-and-built-environment/
[3] https://www.constructiondive.com/news/ai-aec-industry-research-bluebeam/732155/
[4] https://www.linkedin.com/pulse/challenges-ai-adoption-aec-industry-dtrsc/