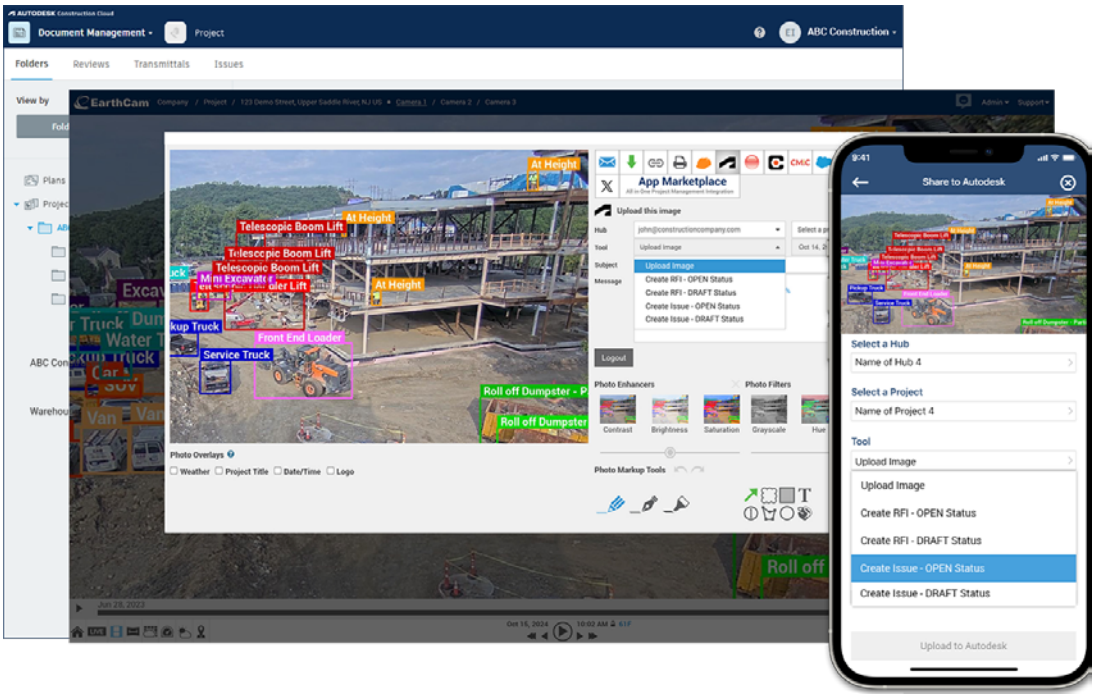
The Rise of AI in Construction

By Grace Ellis, *March 24, 2026*



When most people hear artificial intelligence (AI) or machine learning, the last thing they think of is technology with a human touch. More so, apprehensions can arise because it feels like these concepts are void of humanity entirely.

Many people also believe that AI may have harmful effects on workplaces. The Autodesk 2025 Design & Make Report, for instance, found that 47% of AECO leaders and experts think that AI will destabilize the industry.

There are clearly a lot of valid concerns regarding AI, and given the rise of tools like ChatGPT and generative search, we'll certainly see more conversations happening around the topic. That said, it's worth noting that AI has and can have a tremendous and positive impact, particularly in the construction industry. In the last few years, construction firms have been increasing their investments in and usage of AI technologies to enhance efficiency, despite facing challenges such as resistance to change and workforce adaptation.

When implemented properly, AI and machine learning can improve the daily lives of humans on the jobsite.

And while it may seem like a highly technical non-human approach, artificial intelligence can make things more human. Instead of taking humans out of the equation, AI lets people do their real jobs more effectively.

Interested to learn more about AI trends in construction? We had 25+ industry experts share their thoughts about 2025 construction trends in AI.

What we cover:

Introduction to AI in Construction

Artificial intelligence (AI) is an increasingly transformative force in the construction industry, that's altering how projects are planned, managed, and executed. AI-powered technology poses a major opportunity for AECO firms to dramatically improve productivity,

reduce operating costs, and enhance safety in construction projects. According to the 2025 Autodesk Design & Make Report, over 76% of leaders say they are increasing their investment in AI, up 9% from the previous year.

As the construction sector becomes more digitally advanced and works to proactively solve issues like the labor shortage and rising costs, AI has a crucial role in this transformation. AI can impact nearly every aspect of the design, preconstruction, and building process, including project management, construction site and operations monitoring, safety management, and predictive maintenance.

AI in Construction: Why Do We Need It?
In recent years, technology and digital collaboration have accelerated in construction. Yet, it's difficult to find the resources to implement new technologies while staying on track with your projects.

Enter AI and machine learning.

These technologies will propel the industry forward, improving outcomes for workers, contracting companies, and end clients. AI adoption is also imperative for construction companies to stay competitive in a time of economic uncertainty and improve operational efficiency overall.

If you're willing to get on board, the use of AI can help construction workers improve safety, productivity, quality, and other vital measures. AI can take over monotonous duties and repetitive tasks and help with design and planning, allowing the humans on the team to spend their time honing their expertise and creativity.

Beyond that, AI technologies can help teams and companies make informed predictions, streamlining workflows.

Below, we'll provide an inside look into the rise of AI in construction, and how it can potentially shift the industry in favor of its human counterparts.

Components of AI
Before we get too far into the subject, let's make sure we cover the fundamentals, especially if you're not familiar with the concepts of AI, machine learning, and deep learning already. These terms are often thrown around together, but they do have some key distinctions.

Artificial Intelligence
Let's start with artificial intelligence. AI is a broad field in computer science that deals with creating smart machines that can perform tasks that otherwise typically require human intelligence. These tasks include learning from experience, recognizing patterns, and understanding natural language.

Machine Learning
Machine learning is a subset of AI that involves training algorithms to progressively learn from data to inform predictions or decisions. In the most basic sense, it is defined by the book "Machine Learning: An Artificial Intelligence Approach," as "the ability to learn is one of the most fundamental attributes of intelligent behavior.'

Basically, machines can learn and predict outcomes on their own. Rather than a person programming them, they use software with algorithms that allow them to create predictions based on their analysis of data. For example, a machine can tell you that it needs preventative servicing. In the construction industry, machine learning can also be used to analyze data from jobsites to predict potential safety hazards and optimize resources. These algorithms can also be used heavily in the project planning process to inform costs and estimates, and scheduling.

Deep Learning
Deep learning is a subset of machine learning, wherein the machine is taught to learn and make decisions based on artificial neural networks—specifically, deep neural networks (DNN). Deep learning is primarily used for handling large amounts of complex data.

Now, let's get into what these technologies could do for construction projects and workers.

Internet of Things (IoT)
The Internet of Things (IoT) refers to the network of physical devices, vehicles, and other objects that are connected in some sort of data exchange. Most commonly, they are embedded with sensors or software. In construction, IoT has been used commonly by

modern companies to monitor construction sites in real-time and optimize energy efficiency and monitor air quality. When paired with PPE, devices equipped with sensors can trigger alerts when something malfunctions or in the case of a safety incident, like a fall. Furthermore, IoT can be used in supply chain management when materials and equipment deployment can be tracked. This, in turn, can help teams reduce delays and improve overall operational efficiency.

AI Robotics
AI robotics is another component that involves the use of AI-powered robots. In construction, these robots can perform repetitive and/or manual tasks. Today in the AECO space, robotics have been used in jobsite installations like bricklaying, welding, and demolition. Additionally, AI-powered robots can also be used to monitor construction sites, clean up sites, track progress, and successfully identify potential safety hazards before an incident happens. For instance, solutions such as Spot the Dog, are already being used to monitor jobsites and scale resource efficiency. While robots can be a hefty investment, their use cases are growing and costs are expected to level out as more firms adopt.

5 Useful Applications for AI in Construction

1. Improve Quality of Designs
AI can improve designs overall to make spaces better for the human end users.

For example, WeWork wanted its meeting rooms to match the ways people would be using the spaces. The workspace startup used machine learning to help understand and predict the frequency of use for these meeting rooms, and the company was able to design the space to best fit the needs of the people before starting construction on it.

Autodesk's collaboration with Daisy AI Inc is another great example of using AI in construction design.

Daisy developed an AI-powered construction design system that automates timber floor layout optimization. In line with this, Autodesk Research built a prototype called Kratos, which optimizes conceptual design of mass timber buildings.

Together, the solutions created an end-to-end generative design workflow for timber structures. Ultimately, these solutions can help architects and engineers deliver more sustainable timber-based construction in the future.

The benefits of AI in design don't end there. Machine learning can also help workers figure out mistakes and omissions that might be present in the design before going forward with building.

Instead of spending hours trying to identify errors, you can leave that to machine learning which ultimately saves time and frees up resources for more productive tasks. With the right AI technology, you can even test various environmental conditions and situations in the model. The technology can help determine if a particular element of the design is optimal or predict if it could create an issue down the road.

2. Create a Safer Jobsite
Increased safety is a priority for construction sites; AI provides a high-tech way to achieve this goal.

AI-powered computer vision can be used to analyze trip and fall incidents on the jobsite, helping leaders come up with better safety measures for workers. This same technology can also analyze video footage to flag safety hazards and non-compliance.

For instance, if team members aren't wearing their protective gear properly, AI can spot this and prompt managers to conduct safety training.

Another use case? Streamline construction incident reporting with AI. Sensors, cameras, and IoT devices installed on-site can monitor and gather data in real time and log any incidents that arise.

AI can also assist workers in detecting and reporting incidents. Thanks to natural language processing (NLP), AI-powered systems can analyze reports, identify patterns, and suggest the right course of action.

3. Assess and Reduce Risk
One of the truly amazing capabilities of AI in construction is it can identify risks before they happen. This helps humans increase awareness of potential pitfalls and figure out how to prevent problems from arising. AI can anticipate problems, measure their impact,

and use predictive analytics to help you reduce construction risks.

Let's take a look at another amazing example of machine learning in construction in action. Tools like Construction IQ look at the challenges of leaders in the construction field to understand how AI could help. It found that the AI algorithms were able to prioritize problems and understand risk, such as potential consequences if a concern was not handled.

The AutoSpecs functionality in Forma Build (formerly Autodesk Build) leverages AI to surface missing submittal items before construction begins. The feature, which uses Construction IQ, analyzes project specifications and compares them with historical data to recommend potentially missing submittals. This, in turn, allows teams to be more proactive with managing costs and schedule risks.

All of these things have the potential to help construction managers streamline their workflows and prevent problems.

Pat Keaney, Director of Product Management, Intelligence at Autodesk Construction R&D, points out that AI helps construction pros unlock "superpowers" so they can do their jobs better.

"We're also leveraging AI to automatically identify root causes of RFIs and to continuously identify high risk issues by tracking progress, predicting safety incidents, etc. This stuff is happening literally every single day in construction."

"Over the next five to 10 years, AI and construction is going to be all about augmenting people, making people more efficient, making them smarter, and making their lives better."

- Pat Keaney, Director of Product Management, Intelligence at Autodesk Construction R&D
Learn more by listening to this episode of the Digital Builder podcast, which covers key facts, use cases, and tips on AI and machine learning in construction.

4. Increase the Project's Lifespan
Beyond design and construction, AI can even be instrumental in facility management to extend the total lifespan of an asset. There are often gaps in important information in facility management. As a result, it's difficult to manage repairs and renovations efficiently and cost-effectively on site.

AI and machine learning help streamline the process by augmenting the collection and utilization of data. It does this by classifying documents and data like work orders and assessing pertinent conditions in real time, with surprising accuracy. This takes away these tedious and time-consuming administrative duties from people and allows them to focus on the real problem at hand.

Furthermore, if machine learning is integrated into a BIM model in operations and maintenance, it can determine the best way to carry out maintenance and repairs by visualizing when and where problems will occur. For instance, AI was leveraged in BIM models of the Salesforce Tower in San Francisco to improve facility management. With that data, facility teams can better optimize space and monitor critical metrics like energy usage and upcoming maintenance needs.

5. Powerful Everyday Automation
Simple AI capabilities have already transformed your day-to-day life outside of work without you probably realizing it. Think Gmail, or another email service you use. Advanced filtering gets rid of spam and highlights the most important emails you need to read first. On a more fun note, media platforms such as Netflix surface customized content recommendations for you based on advanced algorithms ensuring you never have to spend countless hours on your coach figuring out what to watch.

In construction, AI is empowering "behind-the-scenes" automations that are making jobs easier and automating repetitive tasks. For example, tools like Forma Build can autodetect title blocks, sheet names, numbers, etc. This seemingly small but powerful capability helps reduce the wasted effort that VDC folks usually need to spend on categorizing their drawings.

What Will Drive AI in Construction Forward?
Ready to use artificial intelligence in construction as soon as possible? To be effective and accurate, AI needs large subsets of data.

As Jim Lynch, (former) Senior Vice President & General Manager of Autodesk Construction Solutions pointed out in an episode of the Digital Builder podcast, "There is so much data and so much to learn from, and that is what artificial intelligence feeds off of. That's how it delivers value."

Jim continues, “10 years from now—maybe less—will we still need design teams to draw doors, walls, and windows? Or do we apply artificial intelligence to capture the requirements? That way, the design and construction teams are integrated further along, so they’re tweaking and quickly generating those construction drawings. There’s so much out there for us to apply artificial intelligence to.”

Of course, data alone isn’t enough. For teams (and AI solutions) to effectively uncover insights, construction data must be organized and integrated.

Unfortunately, many technology platforms out there are not well or integrated, leaving data disconnected. Addressing this issue lies in selecting a connected construction platform that keeps all your data in one place.

Doing so will enable you to organize your data, which then paves the way for more effective analysis and insights.

Top AI Technology and Innovations in Construction
Now that we’ve covered the fundamentals of AI in construction and the value it brings to the industry, let’s look at some of the top AI tools and solutions in the market. Depending on your objectives, you may want to consider the following.

Autodesk AI
Autodesk AI uses machine learning and AI to help project leaders manage and reduce risks in four key areas: cost, schedule, quality, and safety. The solution is available for Forma Build, Forma Takeoff, and Forma Design Collaboration.

Whether you’re working on design concerns, looking into RFIs, or striving to improve safety, Autodesk AI can help you identify and prioritize issues, ensuring you’re tackling the right tasks at the right time.

Today, Autodesk Assistant is also available within Autodesk Forma. This tool helps users get the right data, at the right time, by summarizing key project information, specifications, and more.

EarthCam
EarthCam is a leading provider of live camera technology, content, and services. Construction teams use EarthCam to monitor and document their projects. From webcam content and live streaming video to epic construction time-lapse, EarthCam provides comprehensive ecosystem of visual data solutions to enhance project management and promote transparency.

EarthCam also uses state-of-the-art, server-side AI and Edge Computer Vision, which surpasses the ability of human observers. The company uses AI Object Detection to automate alerts, tags, and visualizations. This means teams can spend less time manually observing projects, and more energy taking action.

viAct
viAct, a company dedicated to providing comprehensive monitoring of construction projects, leverages advanced AIoT (Artificial Intelligence of Things) to automate the tracking of safety, productivity, and maintenance. viAct does this by powering existing job-site cameras with scenario-based AI technology.

The technology powers any on-site camera with scenario-based AI, making it easy to capture safety or productivity issues. ViAct then showcases data in a user-friendly dashboard that teams can quickly identify—and act on—any issues around safety or non-compliance.

Evercam
Evercam enhances construction productivity through site visibility using cameras, drones, BIM and AI in one platform, facilitating team communication. Evercam AI aids site monitoring by recognizing and counting workers and vehicles.

alwaysAI
alwaysAI’s computer vision platform detects and interprets objects, people, and events in real-time, allowing construction teams to track every brick laind and every pipe fitted.

Oculo
Oculo partners with construction leaders, empowering them to step effortlessly and confidently into a new age of insight driven decision-making and enhanced productivity. The core solution uses 360° cameras, computer vision, and AI to collect and structure comprehensive visual data to provide a single source of truth for onsite progress - essentially a “streetview” of construction sites.

Oculo allows construction teams to carry out virtual inspections, spot and resolve issues, and make decisions faster.

Bimmatch
Bimmatch is an AI platform that optimizes the procurement of cost-effective, low-carbon building materials from the early design of the project all the way through building maintenance. The Bimmatch data center couples each customer's building material standards with an intelligent material-matching engine, empowering AEC teams to choose the right products for sustainable, on-budget projects.

Toric
Toric is a data movement workspace designed for AECO to power data-driven decisions. Project teams can extract data from more than 50 construction sources, including project management tools like Autodesk Forma, Building Connected, design tools, scheduling platforms, and more. Data can be transformed with AI to power visualization dashboards and reports at scale, promoting better construction decisions. Toric AI allows project stakeholders to ask questions about project documents and create summaries around teams or projects.

Matterport
Matterport a leading spatial data company focused on digitizing and indexing the built world. Matterport enables construction teams to create and share digital twins, which can be used to design, build, and operate any space. AI plays a critical role within the Matterport platform, with Matterport's Cortex AI serving as the backbone for its entire technological framework.

The Takeaway: AI Helps People in Construction
We hope you can see what we see: that machine learning and AI in construction has some exciting possibilities within our industry for the future, beginning now. But while AI is likely to influence the future of construction, this certainly doesn't mean devices and technology will replace us.

Smart construction technologies like AI are transforming the industry by enhancing efficiency, safety, and cost-effectiveness throughout all stages of construction. But at the end of the day, construction is a human business, and it will stay that way. We need the skills, expertise, and innovation of our workers to win the future. We can use machine learning as just another tool that will let our industry's talents and progress shine. If we use it wisely, it can help us make the most of our creativity and ingenuity. You never know how far it could take our own human abilities.