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Co-existence: Humans and AI

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ABSTRACT

Ferrocement is a promising technology for increasing the flexural strength of deficient reinforced concrete members. The study reported herein investigates the mechanical properties and impact behaviourof mortarthrough difference in polymer content and also by ferrocement with mesh reinforcement incorporated by Styrene Butadiene Rubber Latex. Consequently inorder to exercise proper quality control from materials point of view, the ferrocement specimens beingintended from Ferrocement Model Code and in addition to that the results were checked through the limitations of relevant code. , Six slabs are tested with different loading conditions and the variables were examined through the flexural test ofthe slabs by the methods of attachment of mesh withthe influence of polymer modification on the properties of cement mortar. Performance of the tested slabs and modes of failure are presented and discussed in this paper. The test results confirm thatpolymer modified ferrocement slabs can be used to significantly increase the flexural capacity of RC slabs, with efficiency that varies depending on the tested variables.

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Introduction

AI is transforming learning, businesses and industries. As with the telephone, electric light bulb, steam engine and computer, AI is disrupting existing means, methods, technologies and worldviews. AI is a tool and not an end in itself. At the center of AI is human thought, ethics, goals, needs, and control. AI's disruptive impact can be shaped to achieve positive outcomes or to adversely impact societies, governments and daily life. Humans and AI can, do and must co-exist. The question is how.

How Humans and AI Co-exist Today

In 2023, the U.S. National Institute of Standards and Technology ("NIST") released a risk management framework for AI governance designed to define and promote trustworthiness and manage risk of AI systems: NIST AI RMF 1.0 ("AI Framework") [1]. As this AI Framework addressed traditional AI—not agentic AI—it is currently under revision [2]. In 2026, agentic systems are increasingly common. Unlike traditional AI, which relies on human-controlled prompts, agentic AI relies on autonomous software agents. Direction is not controlled by, and context does not depend on, humans. Instead, agentic AI uses external tools, APIs, and chains complex workflows that span multiple systems. By 2028, agentic AI is projected to make 15% of daily decisions [3]. Currently, AI agents are used to perform tasks such as identifying patterns, predicting trends, creating media content and recommending courses of action [4]. In 2026, to address agentic AI, NIST issued a Concept Note and created a "Trustworthy AI in Critical Infrastructure Profile Community of Interest to provide feedback to NIST" as part of its Strategy for American Technology Leadership in the 21st Century [5,6].

Although agentic AI is here to stay, human direction and decision-making are crucial in managing risk and ensuring regulatory compliance [7]. In law, medicine and transportation, for example, humans provide the core services and are the primary decision-makers. Today, humans utilize agentic AI to outline proposed actions, track performance and make results-oriented adjustments. As humans ultimately determine which AI systems a company will deploy and integrate across its operations and with whom it will contract to provide agentic AI, human decisions have consequences for customers and legal claims. For example, software-as-a-service ("SaaS") contracts typically disclaim "responsibility for accuracy, reliability and fitness for purpose"; narrow indemnification provisions exclude liability for losses resulting from an AI agent's acts or omissions [8].

As companies, school systems and government agencies increasingly deploy AI agents to generate agreements, fulfill purchase orders and respond to customer service calls, regular and systematic human oversight and review are necessary to ensure customers and consumers are not left high and dry when something goes wrong. Specifically, updated and expanded "contractual rights around oversight, transparency and explainability in relation to agentic AI" and operational controls are essential to ensure auditors, courts and regulators have the necessary means to provide redress for losses or harms resulting from agentic AI. To do so, ethics must be at the center of responsible and safe AI development, deployment and integration to reduce bias, maintain privacy and ensure accountability [9].

Although agentic AI may replicate and augment human intelligence, robust ethics ensure agentic AI does not replace human intelligence. In 2021, 193 UNESCO Member States adopted the first global standard on AI ethics as a "basis to make AI systems work for the good of humanity, individuals, societies and the environment and ecosystems, and to prevent harm . . . [and to stimulate] the peaceful use of AI systems" [10]. The objectives were:

"(a) to provide a universal framework of values, principles and actions to guide States in the formulation of their legislation, policies or other instruments regarding AI, consistent with international law;
(b) to guide the actions of individuals, groups, communities, institutions and private sector companies to ensure the embedding of ethics in all stages of the AI system life cycle;
(c) to protect, promote and respect human rights and fundamental freedoms, human dignity and equality, including gender equality; to safeguard the interests of present and future generations; to preserve the environment, biodiversity and ecosystems; and to respect cultural diversity in all stages of the AI system life cycle;
(d) to foster multi-stakeholder, multidisciplinary and pluralistic dialogue and consensus building about ethical issues relating to AI systems;
(e) to promote equitable access to developments and knowledge in the field of AI and the sharing of benefits, with particular attention to the needs and contributions of LMICs, including LDCs, LLDCs and SIDS [11]."

In February 2026, NIST's National Cybersecurity Center of Excellence ("NCCE") launched a project to "demonstrate how identity standards and best practices can be applied to software agents, with a focus on agentic AI applications" [12]. Importantly, although the project was designed to reduce implementation risk related to agentic AI, authorization standards and best practices for agentic architectures, NIST NCCE's proposal is not a regulation or standard and has no legal effect. Legislative action and agency rule-making processes are necessary steps to establish lifecycle governance of agentic AI [13].13 To address this gap, humans must fill it. One such step went into effect within the European Union on August 2, 2026 pursuant to Article 50 of the AI Act governing AI systems transparency—AI-generated and/or AI-manipulated content must now be marked clearly [14].

The crux of the matter is how we want to live with and use agentic AI. Do we want to pursue the perfect algorithm, augment human capabilities, create useful systems that improve quality of life, or go through life on autopilot? Human governance—ensuring transparency, accountability, privacy and security—minimizes the impact of data breaches and reduces the likelihood of costly errors [15]. These measures are critical. Companies, school systems and government agencies must provide regular training on agentic AI to their employees, establish clear agentic AI use policies

that embed ethics and accountability, stress-test AI agent workflows, ensure robust audit programs, include AI-specific provisions in contracts, and require human authorization and action for critical actions, high-risk matters and mission-essential workflows [16]. Viewed as a value chain, ethical AI is a repeatable management practice that applies to infrastructure, measurement and data, models and training, applications and implementation, and management and monitoring [17].

How Humans and AI Will Co-exist Tomorrow

When used properly, agentic AI does not replace humans, it frees us to focus on high-value work and activities. Agentic AI provides scale and processing speed; however, humans provide the necessary safety by exercising judgment, accountability and empathy [18]. Together, humans and AI complement each other, resulting in accelerated innovation, improved customer service, enhanced decision-making, greater reliability, broad accessibility, greater worker satisfaction, and increased productivity and efficiency [19]. Although an estimated 39% of current workforce skills may be outdated by 2030, the World Economic Forum predicts approximately 170 million new jobs (a net gain of 87 million jobs) will be created to offset an estimated 93 million jobs lost [20]. Today, product marketing teams use AI to develop brand strategies and targeted marketing campaigns; AI customer service agents handle routine inquiries while humans handle complex or sensitive issues; and AI modeling of laboratory and radiology results enable medical providers to pinpoint abnormalities and improve diagnosis and treatment of patients. Within the legal profession, law firms, corporate law departments and government legal departments leverage large language models ("LLMs") to break down "specific tasks, sequences action and functions, gathers the right information, takes appropriate actions, and executes workflows end-to-end [21]. It can self-correct, refine outputs, and adjust based on new inputs" [22]. Practical applications include performing legal research and drafting memos as well as reviewing contracts for red flags, potential risks, non-standard terms, etc.—subject to human review. The attorney remains responsible for the accuracy and completeness of the work product, but the time to completion and potential for inadvertent errors is reduced with agentic AI.

Humans and agentic AI have a symbiotic relationship. Agentic AI does not eliminate human involvement, it requires "selective inclusion of human participation" to ensure optimum ethical and regulatory-compliant outcomes [23]. Algorithms are not perfect. Keeping human-in-the-loop ("HITL") supervision and oversight "helps organizations achieve safer, more reliable, and consistent outcomes" as humans are able to review ambiguities, risks, bottlenecks and anomalies at critical and strategic points [24]. As AI is an iterative process, human intervention adds context and structure to the data—"the right kind of human interaction can render the system fundamentally better" [25]. In 2024, for example, human deployment of AI in security operations, decreased the cost of data breaches by an average $1.9 million and shortened the breach period by 80 days [26].

Currently, the financial services industry uses HITL to block or report suspicious payments flagged by AI agents and the healthcare industry uses HITL to sort cases and allocate high-risk, unclear or unusual cases to medical providers for review [27]. While allowing controlled agentic AI autonomy, HITL functions as a safety net. Human guidance, supervision and scaling at critical points "prevents hallucinations, catches errors, and provides ethical guidance in sensitive workflows" [28]. By "validating outputs, correcting errors, fine-tuning models, and providing contextual judgment", humans influence continuous machine learning so AI agents "align more closely with user goals over time" [29].

By preventing unsafe or unintended consequences, HITL improves trust, transparency, accountability and safeguards while reducing potential for agentic AI hallucinations, unethical behaviors, risky shortcuts, misuse, manipulation or abuse [30]. Although HITL may be more expensive and slow down decision-making compared to unfettered agentic AI, HITL ensures accuracy, safety and accountability before action is taken and provides maximum control []31. When humans are out of the loop ("HOOTL"), agentic AI is fully autonomous and functions at maximum speed. As HOOTL involves little or no direct human control, it should only be used for "low-stakes decisions or where the cost of error is acceptable" such as filling drink orders at a fast food chain [32].

A hybrid approach that keeps humans on the loop ("HOTL") is a useful compromise, which provides both speed and safety.

When HITL review is impractical due to scale, humans are able to monitor, supervise and intervene in autonomous AI operations whenever necessary.

As companies, school systems, government agencies and individuals increasingly incorporate AI applications in their daily activities, co-existence is a fact. How humans and AI work together depends on the level of risk involved. Apart from efficiency and cost considerations, human oversight and intervention in agentic AI depends on the severity of the impact, the difficulty in undoing/correcting an action, and the frequency and speed of the decision. Currently, approximately 70% of companies use AI technologies to handle routine, repetitive tasks, digest high volumes of data, and/or use it as a collaboration tool—and roughly 75% use it for people analytics.

In today's work environment, "individuals and teams are using AI to make current business processes more efficient, such as automating painful parts of recruitment, summarizing notes, trimming costs, curating relevant materials and drafting business templates". Agentic AI does not exist in a vacuum. When implementing agentic AI, humans are at the center of every step. Humans inventory actions, score their risks, assign task levels, establish triggers for escalation or work stoppage, test scope and measure impact [36]. Consequently, AI needs humans to ensure accountability and ethics, frame problems, design workflows, correct errors and handle exceptions.

Despite industry hype and media hysteria, "only 5% of AI implementations deliver measurable business returns . . . because leaders overlook the critical role humans play in the system". Put simply, AI should not complicate work or be just another management-imposed system that adds complexity to daily tasks. AI exists to make work faster, more efficient and more cost-effective. When AI makes work easier, faster or both, people use it. "Organizations need human-in-the-loop workflows to bridge the gap between automation and accountability, . . . [particularly] public sector environments, where [trust], compliance, auditability, and reputational risk are constant concerns". For long-term value, human-AI collaboration focused on human workflow is essential as it produces "stronger teams, better decisions, and outcomes that align with mission-critical goals".

Humans make business decisions based on company goals, resources, financial circumstances, internal politics, and governing laws and regulations. These are areas where AI is constrained as it lacks the context, corporate knowledge and experience humans have. Humans provide the "why". Understanding why something works or doesn't work in different situations. Whether developing or using AI-generated code, humans play a vital role in system maintenance, fixing software bugs, eliminating duplicate code. When writing code, AI frequently "struggles with architectural context and can introduce high-risk security vulnerabilities" [42]. Consequently, "human oversight remains necessary because mechanical and strategic bottlenecks [such as reviewing changes, launching apps and releasing software] still require human judgment to ship final software". Human understanding of the reasons why a program was designed and how it will be used inform software design.

Conclusion

As AI evolves over time, humans and AI will continue to co-exist as they complement each other. Together, humans and AI can, do and will achieve optimum results by working collaboratively. As with all revolutionary technologies, AI will continue to disrupt means, methods, technologies and worldviews in ways we may not foresee. Although it will continue to transform learning, businesses and industries, "AI will not replace humans, but those who use AI will replace those who don't". Together, humans and AI add value, improve efficiency, reduce risk and create synergies. Human involvement can and must shape how AI is designed and implemented to impact societies, governments and daily life positively. Humans and AI can, should and must co-exist.

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