ENGINEERING Artificial Intelligence
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Editorial

Founding Statement of *ENGINEERING Artificial Intelligence*

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Engineering systems are becoming increasingly complex, interconnected, and autonomous, with artificial intelligence serving as a key enabler of their evolution and operation. Yet, while many AI methods achieve impressive results on standardized benchmarks and in controlled environments, deploying them within actual engineering systems presents a fundamentally different set of challenges. Real-world deployment demands reliable performance under physical constraints and uncertainty, alongside strict adherence to safety requirements and cost limitations. Bridging the divide between what AI can demonstrate in controlled evaluations and what engineers can reliably depend on in practice is the central motivation for launching *ENGINEERING Artificial Intelligence*.

We use the term "Engineering AI" to emphasize a distinct research paradigm. It is neither simply another label for applying off-the-shelf AI to engineering problems, nor merely a matter of incrementally tuning model architectures for marginal gains in benchmark metrics. Rather, Engineering AI focuses on designing, validating, and deploying AI methodologies under strict engineering constraints, where success is measured by system-level performance in real-world settings. It connects theoretical advances and algorithmic design with engineering prototypes, rigorous testing, and scalable industrial deployment. Ultimately, Engineering AI aims not only to optimize complex engineered systems, but also to fundamentally transform how engineering research, design, manufacturing, and maintenance are conducted.

The evolution of the field illustrates AI's growing capacity to reshape engineering practice. Statistical learning made predictive quality control and equipment health monitoring viable. Deep learning opened new frontiers in visual inspection, autonomous navigation, and real-time control. Today, large multimodal models are accelerating knowledge extraction and simulation for complex engineering problems, while embodied intelligence is bringing autonomous robots into unstructured physical environments. Across all these developments, the true measure of progress lies not merely in improved model accuracy, but in the transformative engineering capabilities they unlock.

As digital and intelligent transformation profoundly reshapes global industry, major initiatives, including China's national strategy for developing its digital economy and intelligent technologies, are generating unprecedented demand for engineering-driven AI research. Against this backdrop, *ENGINEERING Artificial Intelligence* has been launched as a proud new member of the *ENGINEERING* journal family. Our guiding principle is clear: to advance intelligence by grounding innovation in engineering practice, and to help build a smarter future through dependable intelligent systems.

Our journal covers the entire innovation pipeline, from foundational AI theory and algorithmic innovation to system implementation and industrial deployment. Alongside fundamental research, we place high value on engineering applicability, safety assurance, and industrial relevance. We are particularly interested in work that moves beyond laboratory demonstrations to achieve validation under realistic conditions and deployment in operational environments. Consequently, we welcome problem-oriented, interdisciplinary research that transcends traditional boundaries between computer science, systems engineering, applied mathematics, automation, energy, urban studies, and the life sciences.

We publish a diverse range of contributions, including original research papers, review articles, perspectives, and communications. While we seek rigorous, original

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discoveries and transformative technical advances, we equally encourage forward-looking discussions and insightful perspectives that together offer a comprehensive view of innovation in Engineering AI. Our goal is to establish this journal as a premier, trusted venue for pioneering work that opens new research frontiers or challenges established scientific paradigms.

The ultimate value of science and technology lies not only in expanding human knowledge, but also in solving practical challenges and delivering tangible societal benefits. Academic journals serve both as a forum where ideas converge and as a vital link connecting technological innovation with practical needs. *ENGINEERING Artificial Intelligence* is deeply committed to openness, academic rigor, and inclusiveness. Working alongside leading scholars and engineering experts worldwide, we strive to align theoretical innovation with engineering practice and industrial demands. We warmly invite researchers around the globe to join us in addressing the fundamental challenges of intelligent engineering, and in advancing the safe, reliable, and efficient application of artificial intelligence across engineering systems, industry, and society at large.



Jie Chen received the B.S., M.S., and Ph.D. degrees in Control Theory and Control Engineering from Beijing Institute of Technology, Beijing, China, in 1986, 1996, and 2001, respectively. He currently serves as the Vice President of the Chinese Academy of Engineering, and he is a Professor of School of Astronautics, Harbin Institute of Technology, Harbin, China. He also serves as the Director of the State Key Laboratory of Autonomous Intelligent Unmanned Systems. He was the President of Tongji University from 2018 to 2023.

His research interests include complex systems, multiagent systems, multi-objective optimization and decision-making, and constrained nonlinear control. Prof. Chen is currently the Editor-in-Chief of *ENGINEERING Artificial Intelligence*, *Unmanned Systems*, and *Journal of Systems Science and Complexity*. He has served on the editorial boards of several international journals, including *IEEE Control Systems Magazine*, *International Journal of Robust and Nonlinear Control*, and *Science China Information Sciences*. He is an IEEE Fellow, IFAC Fellow, and ACA Fellow. He was elected a Member of the Chinese Academy of Engineering in 2017.



Ben M. Chen received the B.S. degree in Mathematics and Computer Science from Xiamen University, Xiamen, China, in 1983, the M.S. degree in Electrical Engineering from Gonzaga University, Spokane, WA, USA, in 1988, and the Ph.D. degree in Electrical and Computer Engineering from Washington State University, Pullman, WA, USA, in 1991.

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Dr. Chen has served on the editorial boards of several international journals, including *Automatica* and *IEEE Transactions on Automatic Control*. He is currently the Editor-in-Chief of *ENGINEERING Artificial Intelligence* and *Unmanned Systems*. He is an IEEE Fellow and a Fellow of the Academy of Engineering, Singapore.