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Summary of the editorial from CETIM INFO newsletter N° 37

By Mr. Lyes Madi,
Chairman and CEO of CETIM

Technical Dossier Summary from CETIM INFO newsletter N° 37

Multi-Agent Systems and Generative AI : Towards a New Generation of Autonomous Industries

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Summary of the Interview with Professor Abderrazak SEBAA

Deputy Director, Higher School of Computer Science and Digital Technologies (ESTIN), Béjaïa

Title :
Artificial Intelligence : A Strategic Driver for Industrial Competitiveness

from CETIM INFO newsletter N° 37

INDUSTRIAL GROUP OF CEMENTS OF ALGERIA - GICA

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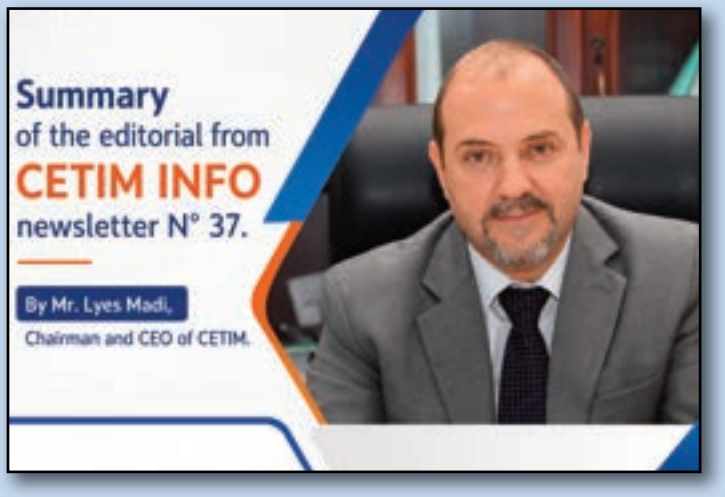
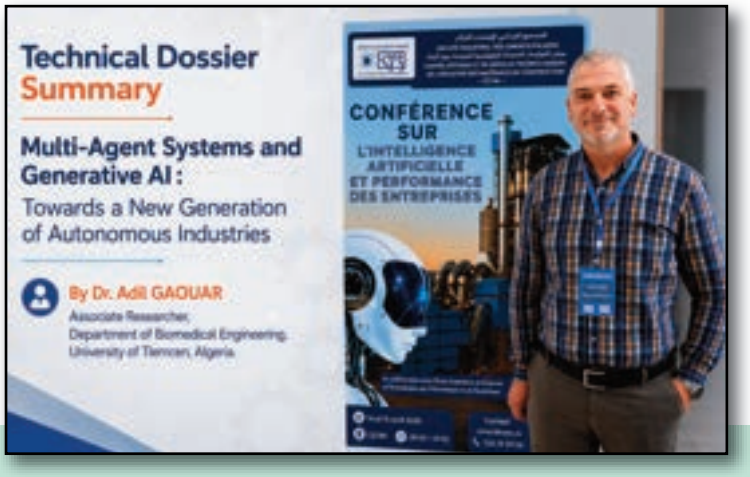


Artificial Intelligence (AI) is driving a new industrial revolution, transforming the way industries innovate, operate, and compete. Far beyond automation, AI optimizes industrial processes, enhances product quality, supports intelligent decision-making, improves energy efficiency, and enables predictive maintenance, paving the way for smarter, more resilient, and sustainable manufacturing.

To address these strategic challenges, CETIM, in partnership with the Higher School of Computer Science and Digital Technologies (ESTIN), organized the "Artificial Intelligence and Enterprise Performance" conference-workshops. The event brought together experts, researchers, academics, and representatives of GICA Group subsidiaries to exchange knowledge, share best practices, and explore practical AI applications for the national industrial sector.

This initiative reflects CETIM's and the GICA Group's commitment to accelerating industrial modernization through innovation, technology transfer, and stronger collaboration between industry, research institutions, and academia. AI is no longer an emerging trend but a strategic imperative for building a smarter, more competitive, and future-ready industry.



Artificial Intelligence is evolving beyond data analysis to become a true decision-making and action-oriented technology. While traditional AI has significantly improved predictive maintenance, quality control, and process optimization, the next industrial revolution is driven by Agentic AI, Multi-Agent Systems (MAS), Large Language Models (LLMs), and cloud–edge computing architectures.

Multi-Agent Systems provide a decentralized approach in which autonomous software or robotic agents perceive their environment, make decisions, cooperate, and execute actions to achieve common industrial objectives. Compared with centralized AI systems, MAS offer greater flexibility, scalability, resilience, and real-time adaptability in increasingly complex manufacturing environments.

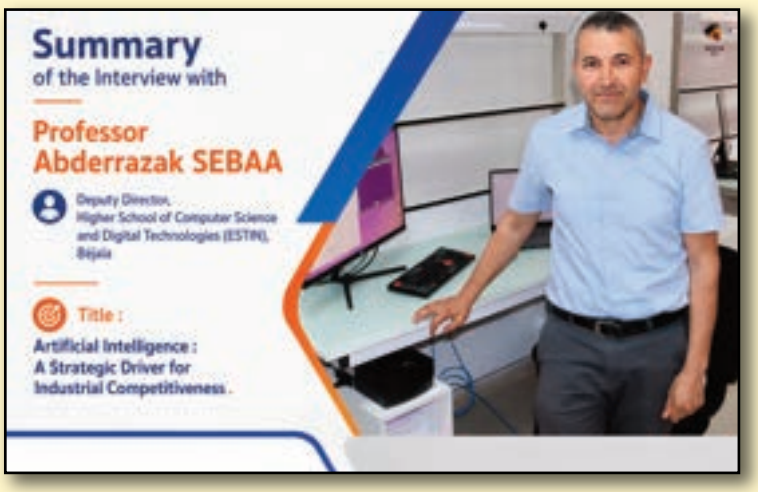
The integration of Large Language Models has transformed intelligent agents by enabling advanced reasoning, multi-step planning, contextual understanding, and natural language interaction. These cognitive capabilities have led to the emergence of Agentic AI, an objective-driven approach in which autonomous agents can coordinate with one another, continuously improve their performance, and collaborate efficiently with human operators.

Modern smart factories increasingly rely on specialized agents responsible for perception, data analysis, decision-making, and operational control. Their coordinated interactions, supported by orchestration layers and digital twins, allow manufacturers to simulate industrial scenarios, validate strategies, and optimize production before implementing changes on the factory floor.

Industrial case studies already demonstrate significant benefits, including reduced production downtime, higher productivity, and lower operational costs. However, these advances also introduce major challenges related to cybersecurity, system reliability, interoperability, and workforce adaptation.

Aligned with the vision of Industry 5.0, the future of manufacturing is not based on replacing humans but on strengthening collaboration between people and intelligent autonomous systems. Emerging industrial ecosystems will become increasingly distributed, adaptive, and interconnected, enabling factories to respond dynamically to changing market demands while ensuring sustainable and responsible production.

The transition toward Agentic AI therefore represents more than a technological evolution ; it marks a fundamental shift in industrial paradigms. The key challenge is no longer whether industries should adopt autonomous intelligent systems, but how to implement them responsibly while maintaining effective human supervision and strategic control.



In this interview, Professor Abderrazak SEBAA, Deputy Director of the Higher School of Computer Science and Digital Technologies (ESTIN), discusses the growing role of artificial intelligence (AI) in transforming industry and strengthening Algeria's industrial competitiveness.

Professor SEBAA explains that AI has evolved from early symbolic computing and expert systems to today's era of deep learning and generative AI, with the United States and China leading global innovation while Europe focuses on ethical regulation. He emphasizes that Algeria must move beyond being a technology consumer and become an active contributor to AI development.

Reflecting on the CETIM–ESTIN conference on "AI & Industrial Performance", he highlights the importance of strengthening collaboration between academia and industry. Such initiatives promote knowledge transfer, encourage innovation, and help industrial companies adopt AI solutions with greater confidence.

According to Professor SEBAA, AI delivers tangible benefits across manufacturing by enabling predictive maintenance, optimizing energy consumption, improving product quality through computer vision, reducing production downtime, and supporting smarter, data-driven decision-making. In the cement industry, AI can significantly enhance operational efficiency while reducing environmental impact.

He stresses that successful AI integration depends on reliable data, workforce training, gradual implementation, and strong partnerships between research institutions and industry. CETIM, in particular, can play a strategic role as an innovation catalyst by connecting industrial needs with advanced technologies, facilitating technology transfer, conducting AI audits, organizing training programs, and supporting collaborative projects with institutions such as ESTIN.

Professor SEBAA concludes that AI is no longer an option but a strategic necessity for industrial development. By investing in skills, innovation, and cooperation between universities, businesses, and public institutions, Algeria has the potential to become a regional leader in industrial AI by 2030, building a smarter, more competitive, and more sustainable industrial sector.