Next Steps in Artificial Intelligence

• Matthew Jaster, Senior Editor

Representatives from Mercedes, Siemens, Beckhoff, Arburg, Hawe, KSB and Sick, among others, spent three days this summer discussing the relationship between humanoids and AI, the revival of reinforcement learning and AI utilization. As AI implementation becomes easier for manufacturers, the focus is evolving to address challenges and new opportunities across the entire industrial sector.

Intelligent Robots/Intelligent Bodies

Hannover Messe reports that several robots are already performing many AI tasks today. While the software is becoming ever more powerful, the mechanical construction (the body, for example) often falls by the wayside. Edoardo Milana, junior professor of soft machines at the University of Freiburg, advocates a paradigm shift: away from rigid machines and towards flexible, body-intelligent robots.

One example: four-legged robots, so-called quadrupeds, need around 300 watts to move around. A real dog, on the other hand, only needs 30 watts—with significantly more complex movements. The reason lies in nature itself: Biological bodies use their mechanical properties to perform movements efficiently and flexibly.

Milana emphasizes the importance of "embodied intelligence," a concept from philosophy and psychology that states that intelligence is not only anchored in the brain, but also in the body. For robotics, this means that the body of a robot should not just be passively controlled by the software but should actively contribute to intelligence.

A robot that can adapt to its environment requires less central computing power and energy. This allows resources to be used for more complex tasks such as planning and perception.

Milana's research focuses on soft robots/machines made of soft, flexible materials, inspired by simple and aquatic organisms.

One fascinating example is robots with self-oscillating valves: Air pressure causes these valves to open and close rhythmically, controlling the robot's movement—completely without digital microcontrollers.

Such designs show that physical principles can be used to achieve movement and adaptability without having to rely on complex software. The combination of soft materials and intelligent design enables robots to interact with their environment more safely, efficiently and agilely.

Agentic AI/Proactive Intelligence

Schneider Electric is launching a multi-year initiative to build an AI-based ecosystem for sustainability and energy management. At the heart of the initiative is the new Agentic AI technology—intelligent software that acts independently or in collaboration with customers and consultants, analyzes complex environments, and adapts in real time. Unlike traditional software, Agentic AI is designed to proactively take on tasks, marking the shift toward an AI-native, agent-based software system.

The new system serves as a strategic control center that transforms fragmented sustainability measures into intelligent, connected processes. AI agents work closely with specialists and existing systems to continuously achieve better results.

"Our vision is collaborative intelligence—agent-based AI that works alongside human experts as a true digital teammate," explains Steve Wilhite, president of sustainability business at Schneider Electric. "This technology enables us to achieve a multiplier effect: complex data analysis and tasks are automated, allowing our customers to focus on strategic initiatives and innovation—the levers that deliver real impact. This is a fundamental shift in how organizations can accelerate their path to energy transition and decarbonization."

"Agent-based AI is only as powerful as the expertise that underpins it," emphasizes Amy Cravens, research director, sustainability and ESG Software at International Data Corporation (IDC). "With deep consulting expertise, Schneider Electric is developing a system that helps companies overcome complex challenges and make sustainability measurable."

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