Summary post

by Saleh Almarzooqi - Monday, 18 August 2025, 6:51 PM

ABS serves as a solution to the mounting complexity of contemporary computing problems and the heightened nature of distributed, autonomous decision-making. With an increased need to operate in dynamic environments, the shift from centralised, monolithic systems toward decentralised, agent-based architectures has been a contributing factor in this move as companies want to ensure a more scalable, flexible, and resilient architecture. The agent-based systems are made of intelligent and autonomous agents that sense their surroundings, decide about actions, and interact with other agents or systems, forming a very flexible problem-solving framework.

ABS is based on the capacity to provide modular development and decentralisation. Compared with conventional systems, where a breakdown in any component can crash the whole system, ABS works independently and embraces failures in them, providing robust systems (Mussawar, Mayyas & Azar, 2024). The decentralised architecture has meant that ABS is especially applicable in logistics and supply chain business applications, dealing with e-commerce and financial models. As an example, logistics may provide agents that can represent the various stakeholders or processes and enhance the efficiency and responsiveness to the fast-moving environment (Schimeczek et al., 2023).

The belief-desire-intention (BDI) framework is one of those models that help the agent assume a goal-oriented model, enabling them to deal with complex and dynamic situations (Sharghi, Sheikhani & Kerachian, 2025). ABS is quite useful when there is a need to be adaptable and react to problems in a real-time manner.

ABS has provided organisations with a new set of tools to optimise, mitigate risk, and generate innovation in a marketplace; simulating complex environments to understand how they operate, how disparate agents can be coordinated, and how organisations can adapt to changes in the environment (Zhao et al., 2022). As ABS technologies are still evolving, they can transform the industries and make companies more resilient to uncertainty.

References:

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