Initial post

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The use of agent-based systems has become popular because of modelling complex and decentralised decision-making behaviour, which correlates with growing needs in terms of flexibility and scalability of modern organisations. The AI and ML methods are being used widely because of their versatility. The systems are made of free-willed agents that communicate with each other in an environment to fulfil certain objectives. Agent-based models are especially suitable for problems in dynamical, uncertain environments because of the growing complexity of the tasks and the necessity to manage them in real-time through adaptive responses.

The capability to model complex interactions and environments is one of the main advantages of using agent-based systems, making such simulations more realistic in various industries, including logistics, manufacturing, and finance (Lu et al., 2024). Such models enable organisations to streamline decision-making activities and test the simulated real-life situations and eventually upgrade the planning and management of the reserves.

Another benefit is the decentralised nature of agent-based systems. Agents can act on their own, so each agent has localised knowledge and makes decisions independent of the others and interactions; therefore, there is greater resilience to failures of the system. On large-scale systems, this decentralised strategy has the potential of making the system more robust, minimising the risks of single points of failure and resulting in better management of the resources employed (Cincotti, Raberto & Teglio, 2022).

Furthermore, agent-based systems promote flexibility and adaptability. Since the agents can learn from their surroundings and can adapt to the environment accordingly, they can fit an organisation working in an environment that has an ever-changing environment and lacks unpredictability (Mussawar, Mayyas & Azar, 2023). Such flexibility is capable of leading organisations to remain competitive and to react fast when changes are experienced in the market.

References:

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