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(57) Abstract :

The invention discloses an AI-based framework for optimized cloud resource allocation comprising workload analyzer (101), prediction engine (102), reinforcement learning agent (103), resource allocator (104), feedback monitor (105), and cloud infrastructure (106). The framework employs predictive analytics, reinforcement learning, and adaptive feedback loops to dynamically allocate computing, memory, storage, and network resources. It ensures SLA compliance, cost efficiency, and resilience against anomalies. The invention provides a self-adaptive and intelligent solution for efficient utilization of cloud infrastructures across diverse workload environments.

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