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(57) Abstract :
Autonomous Edge Computing Device with Integrated AI and Adaptive Learning Capabilities for Enhanced IoT System Optimization and Real-Time Decision-Making ABSTRACT The invention relates to a system 100 for autonomous edge computing with integrated AI and adaptive learning capabilities designed to enhance Internet of Things (IoT) systems. The system includes an edge computing device 102 with a processing unit 104 for executing machine learning algorithms, and a memory unit 106 for storing data and model parameters. It features an adaptive learning module 108 that updates models based on real-time data and performance feedback. The device is equipped with a communication interface 110 for data exchange with IoT devices, and a decision-making engine 112 that utilizes adaptive learning outputs for real-time optimizations. A data aggregation unit 114 preprocesses data from multiple IoT devices, while a feedback loop mechanism 116 monitors system performance and adjusts the adaptive learning module 108 as needed. This system improves efficiency, dynamic model updating, and decision-making for optimized IoT performance.

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