

SUSTAINABLE IOT: A COMPARATIVE STUDY OF FRAMEWORKS AND PERFORMANCE METRICS

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As the Internet of Things (IoT) ecosystem expands rapidly, sustainability challenges related to energy consumption, resource utilization, and e-waste have emerged. Sustainable IoT (SIoT) introduces green paradigms into IoT architectures, focusing on minimizing environmental impact while maintaining functional efficacy of IoT systems. This paper provides a comprehensive review of sustainable IoT frameworks, proposes a tri-layered sustainability model, and compares performance across existing literature. Simulation results demonstrate the proposed framework's superior performance in energy efficiency, emissions, and scalability. A graphical analysis highlights these improvements, establishing a baseline for future green IoT developments.
