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**THE ROLE OF OPERATING SYSTEM IN EDGE COMPUTING: OPPORTUNITIES AND CHALLENGES**

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**ABSTRACT**

Edge computing is revolutionizing distributed computing by processing data closer to its source, with customized operating systems playing a pivotal role. This research explores the multifaceted benefits of operating systems in edge computing, including efficient resource management, real-time data processing, enhanced security, seamless cloud integration, and support for diverse edge architectures. Despite these advantages, operating systems in edge computing face challenges such as resource constraints, device compatibility issues, security vulnerabilities, complex management, and ensuring reliability in dynamic edge conditions. This study aims to provide comprehensive insights into the critical role of operating systems in shaping the future of edge computing, considering both its opportunities and challenges to drive technological advancements in this domain.

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