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Power Restrictions for Android OS: Managing Energy Efficiency and System Performance

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Abstract

Power management is critical for enhancing the performance and longevity of mobile devices running the Android operating system. This paper examines the evolution of power restrictions in Android OS, focusing on recent advancements in energy-efficient application management. We analyze key mechanisms such as Doze mode, App Standby, and background execution limits, and their impact on extending battery life while maintaining a balance between user experience and system performance. The paper also addresses the challenges developers encounter in optimizing applications within these constraints, offering insights into best practices and future pathways for enhancing energy efficiency in Android-powered devices.

Author Keywords

Android OS power management, Efficient data fetching and syncing, AI-driven power optimization, Context-aware energy management, Energy efficiency in mobile devices

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