

A Framework for Offline Screen Time Control Inchildren: Focus on TV, Gaming Behaviour Studies

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Abstract

Effective management of children's screen time has become a significant concern for parents, particularly working parents, as excessive exposure to digital devices can adversely affect children's psychological and developmental well-being. While mobile-based monitoring applications exist, they primarily target smartphones and tablets and do not adequately regulate offline televisions and video game consoles, which remain prevalent in many households, particularly in countries like Sri Lanka. This study proposes an offline screen time management system designed to provide comprehensive oversight of device usage without relying on internet connectivity or smartphones. The system employs child-specific login PINs, automated session tracking, weekly usage reports, hardware-level power control, and real-time SMS notifications to parents. The design emphasizes cost-effective, locally deployable hardware suitable for low-resource settings and is informed by a review of behavioural studies on the effects of screen time, ensuring both technical and developmental considerations are addressed. Preliminary evaluation indicates that the system can accurately monitor device usage, support adherence to screen time limits, and promote healthier digital habits, providing parents with timely, actionable information. Limitations include manual setup and local data storage constraints. Future research could extend the system to track specific channels or content viewed and generate detailed reports for parents, enabling more granular oversight.

Keywords: Screen Time, Television, Behavioural Patterns, Digital Well-being, real-time tracking