Chapter 13
Screen Time and Safety: How Parents Can Monitor and Protect Their Kids Online

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ABSTRACT

As digital technology becomes more integrated into children's lives, ensuring their online safety is increasingly important for parents. This research investigates effective methods for managing screen time and addressing online threats like cyberbullying, harmful content, and phishing. Using the Family Online Safety Dataset (FOSD-2023), which includes 12,000 anonymized records of screen usage and parental controls for children aged 7–16, we developed a hybrid Random Forest–LSTM model. The model identified potential risks with 94.6% accuracy, 92.3% precision, and 93.7% recall. It also offered personalized recommendations to help parents adjust screen time and content filters. The findings underscore the importance of intelligent monitoring tools that promote both safe and balanced digital use.

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1. INTRODUCTION

The digital age has ushered in unprecedented access to information and entertainment, especially for children and adolescents. However, this connectivity comes with growing concerns over online safety, screen addiction, exposure to harmful content, and cyberbullying. According to a 2024 report by Common Sense Media (Bhardwaj et al., 2024) (Dhawan et al.,2025), children aged 8 to 18 now average 7.5 hours of screen time per day, with nearly 62% engaging with social media platforms that may not be age-appropriate. While digital literacy is essential, unregulated screen time can negatively affect mental health, academic performance, and social behavior.

To address these challenges, modern parental monitoring tools have evolved from basic time locks to intelligent systems (Mascari et al.,2025) that integrate AI-driven content filtering (Nahar et al.,2023) (Pithawa et al., 2023), real-time activity tracking, and behavior analysis. Tools such as Bark, Qustodio, and Google Family Link have introduced automated alerts, keyword detection, and app usage summaries to empower parents. However, most rely on static rule-based systems that fail to adapt to changing behavior patterns.

This study proposes a hybrid Random Forest–LSTM (Long Short-Term Memory) approach that not only tracks screen time but also detects anomalous and potentially harmful online behaviors over time. Unlike conventional classifiers, the LSTM component captures sequential usage patterns, enabling predictive insights. Using the Family Online Safety Dataset (FOSD-2023), which includes 12,000 instances of device logs, flagged content, and parental interactions, the model achieved an overall detection accuracy of 94.6%, outperforming traditional SVM and KNN models by over 7%.

Real-world case studies underline the urgency of intelligent intervention. In a 2023 case from Texas, a 13-year-old's prolonged exposure to unfiltered forums led to self-harm behavior undetected by static parental controls. Incidents like these emphasize the need for adaptive, machine learning-based systems capable of early threat identification. By combining predictive analytics and user behavior profiling, this research offers a proactive framework for parents to safeguard their children online—balancing freedom with safety in an increasingly digital childhood.

1.1 Children Cybercrime Cases

As of 2025, cybercrimes targeting children in India have escalated significantly, reflecting a concerning trend in online safety for minors. According to the latest data from the National Crime Records Bureau (NCRB), there were 1,823 reported cases of cybercrimes against children in 2022, marking a 32% increase from the previous