



Parental Control Android App

MINOR PROJECT PRESENTATION

By

Samsoth Sanjay (2021UG1090)

Under Guidance of

Dr. Kirti Kumari

Department of Computer Science and Engineering

Indian Institute of Information Technology Ranchi

Ranchi- 835217



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Introduction

- Parental control applications play a crucial role in ensuring children's safety in the digital world.
- They allow parents to monitor and manage their child's online activities.
- This project focuses on creating an Android-based parental control app.
- The app includes suspicious activity detection and real-time notifications.

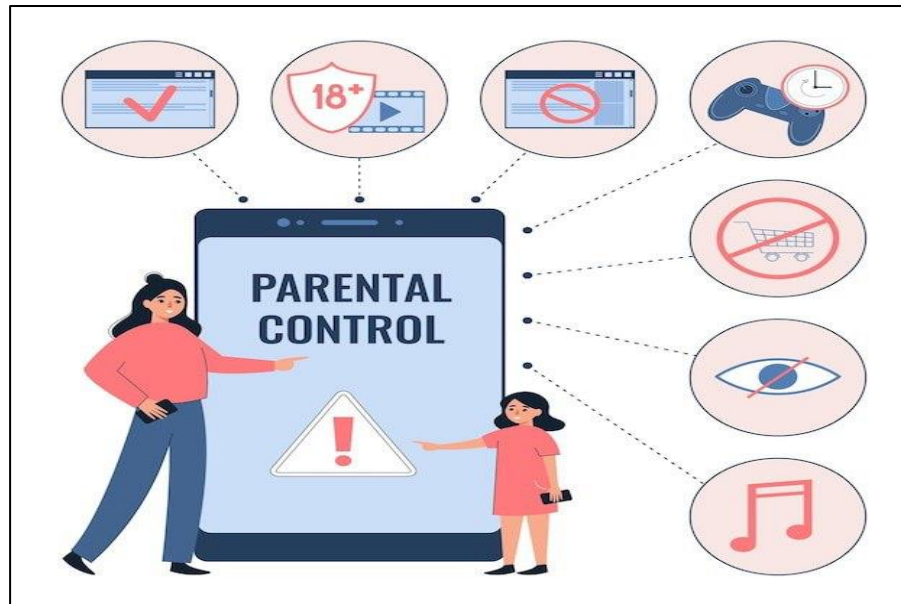


Fig 1: Parental Control Features

Motivation

- With the increasing digital exposure among children, ensuring safe usage is a priority for parents.
- Monitoring apps provide an additional layer of safety by helping parents stay informed about their child's digital activities.
- This project focuses on implementing practical features that allow parents to monitor and manage digital behavior effectively.



Fig 2: Need for Monitoring



Features

- **User Authentication:** Secure login feature using email and password for parental control access.
- **Keyword Monitoring:** Real-time detection of suspicious keywords typed on the device.
- **Restricted App Monitoring:** Alerts generated when restricted applications are opened.
- **Notifications:** Instant notifications for detected keywords or restricted app usage.
- **Email Alerts:** Sends email alerts to the registered parental email for suspicious activities.
- **Customizable Restrictions:** Parents can add or remove restricted apps dynamically.
- **Simple and Intuitive UI:** User-friendly interface for managing restrictions and monitoring.
- **Accessibility Service:** Utilizes device accessibility features to monitor real-time events.



Technology Stack

- **Programming Language:** Kotlin – used for developing the Android application.
- **Framework:** Firebase Authentication – for secure user authentication.
- **Backend:** Spring Boot – for handling email notifications securely.
- **Database:** Shared Preferences – for storing user-specific data like email.
- **Notification Service:** Android Notification Manager – for delivering in-app alerts.
- **API Management:** Volley – for seamless communication between the app and backend server.
- **IDE:** Android Studio – for designing, coding, and testing the app.
- **Build Tools:** Gradle – for dependency management and build configuration.



Implementation Details

➤ User Authentication:

- Implemented secure login using Firebase Authentication to manage user access.

➤ Backend Email Notifications:

- Developed a Spring Boot backend service to send email alerts to parents for suspicious activities.

➤ Keyword Detection:

- Integrated Accessibility Service to monitor device activity and detect suspicious keywords in text.

➤ Restricted App Monitoring:

- Used UsageStatsManager to monitor foreground app activity and trigger alerts for restricted apps.

➤ Real-time Notifications:

- Implemented Android notifications for instant alerts on suspicious activities or app usage.



Keyword and Restricted App Monitoring

➤ **Keyword Detection:**

- Monitors text input across various apps using Accessibility Services.
- Detects suspicious keywords in both English and Romanized Telugu.

➤ **Restricted App Tracking:**

- Identifies and logs when restricted apps are accessed on the device.
- Keeps a dynamic list of restricted apps that can be managed by the parent.

➤ **Multi-language Support:**

- Supports keyword detection in both English and Telugu to serve a wide range of users.



Keyword and Restricted App Monitoring

➤ Real-Time Monitoring:

- Ensures continuous observation of user activity for immediate detection.

➤ Alert Triggers:

- Triggers in-app notifications and email alerts to parents when suspicious keywords are detected or restricted apps are accessed.



Fig 3: Suspicious Activity Alert



Accessibility Integration

➤ **Accessibility Service Integration:**

- Utilizes Android's Accessibility Service to monitor text input and app usage in real-time.

➤ **Keyword Detection:**

- Automatically scans text inputs for predefined suspicious keywords, ensuring comprehensive monitoring.

➤ **Restricted App Tracking:**

- Tracks and alerts when specific restricted applications are opened by the child.

➤ **Permission Handling:**

- Ensures proper permissions are requested and managed for seamless functionality.



Notifications and Alerts

➤ **Real-Time Notifications:**

- Sends instant in-app notifications to alert parents about suspicious activities or restricted app usage.

➤ **Email Alerts:**

- Delivers detailed email alerts to the parent's registered email address for better tracking and record-keeping.

➤ **Customizable Alerts:**

- Parents can set restricted apps and keywords to customize the alert system based on their needs.

Notifications and Alerts

➤ High-Priority Notifications:

- Notifications are marked with high priority to ensure they are not missed by the parent.

➤ Seamless Integration:

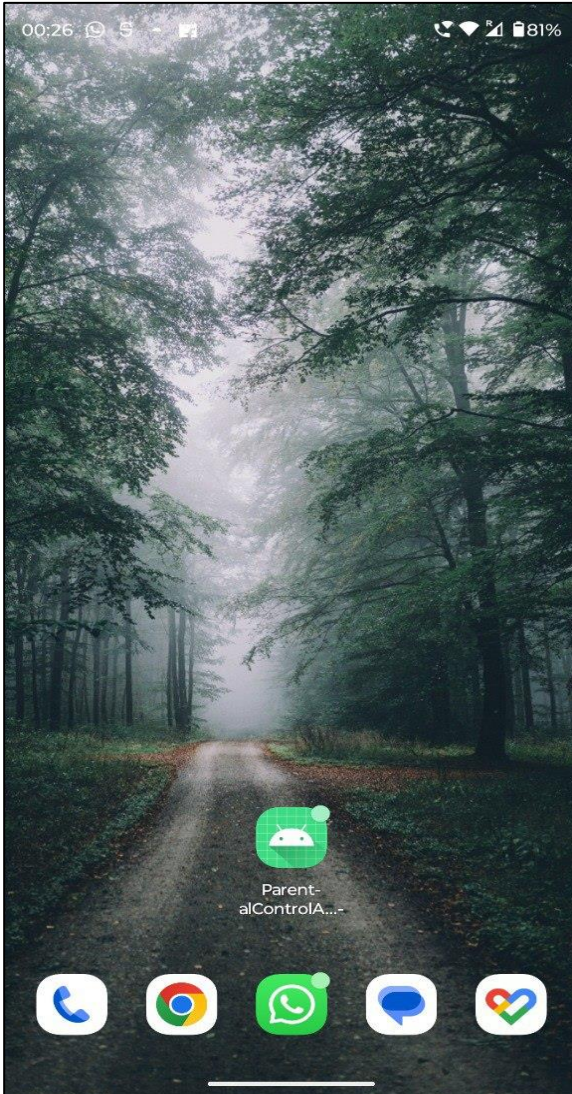
- Notifications and email alerts work together smoothly for a better experience.



Fig 4: Alert Example



App Screenshots



App Icon on Home Screen

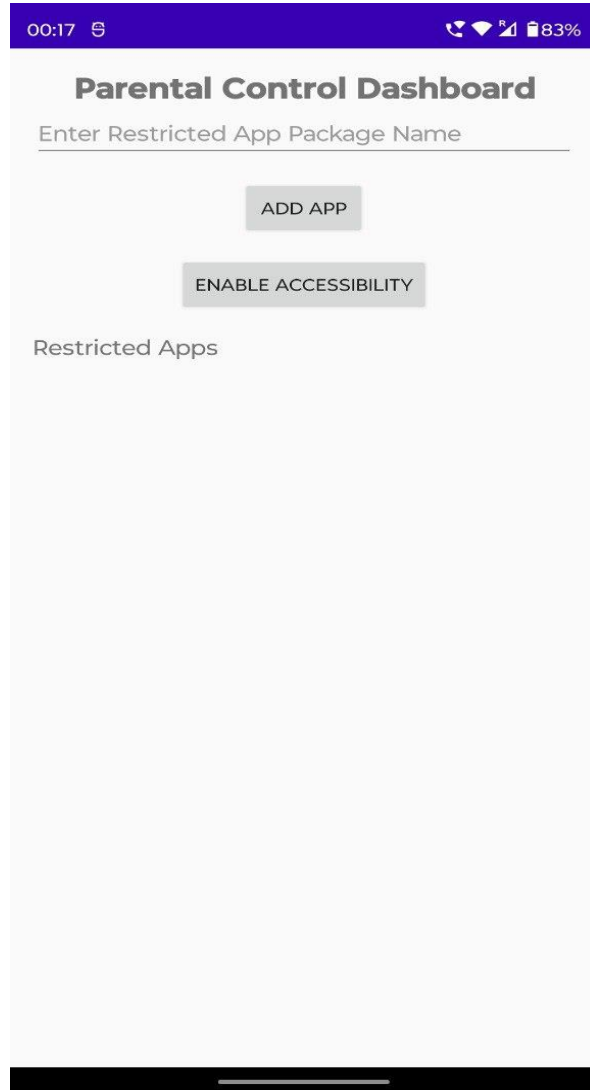


Login Page

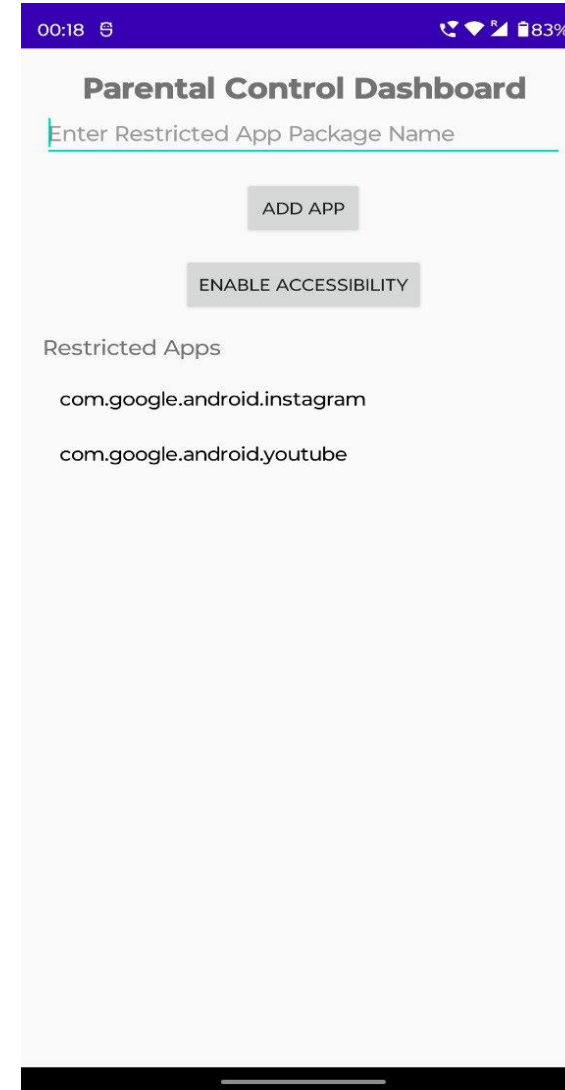


Login Success Message

App Screenshots



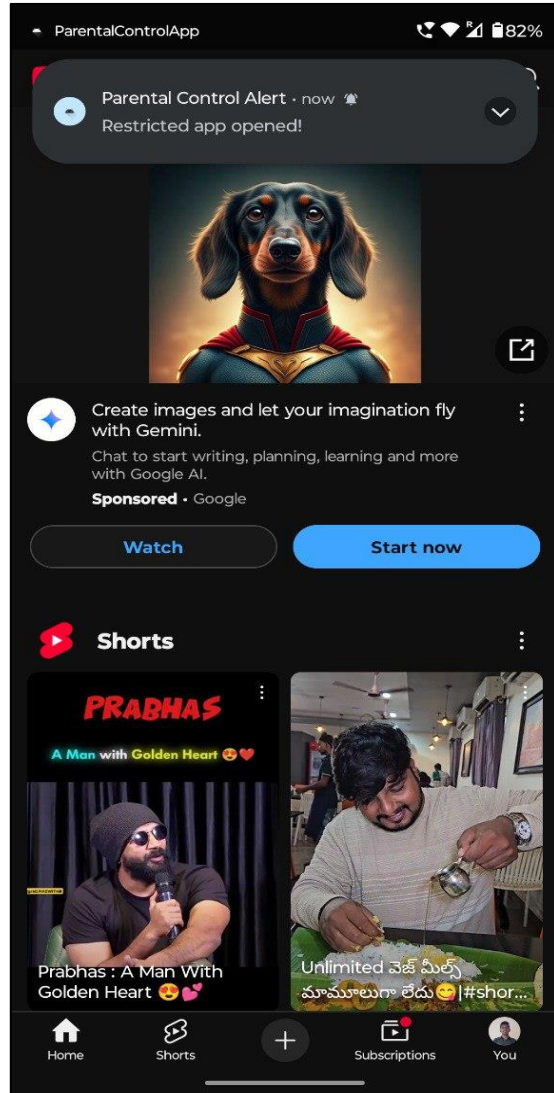
Empty Dashboard



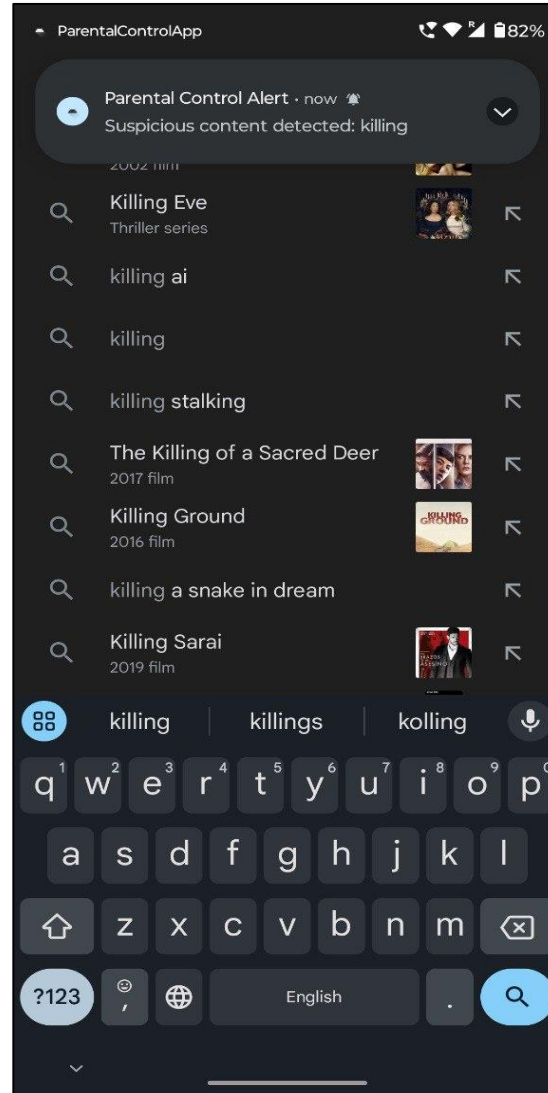
Restricted Apps Added



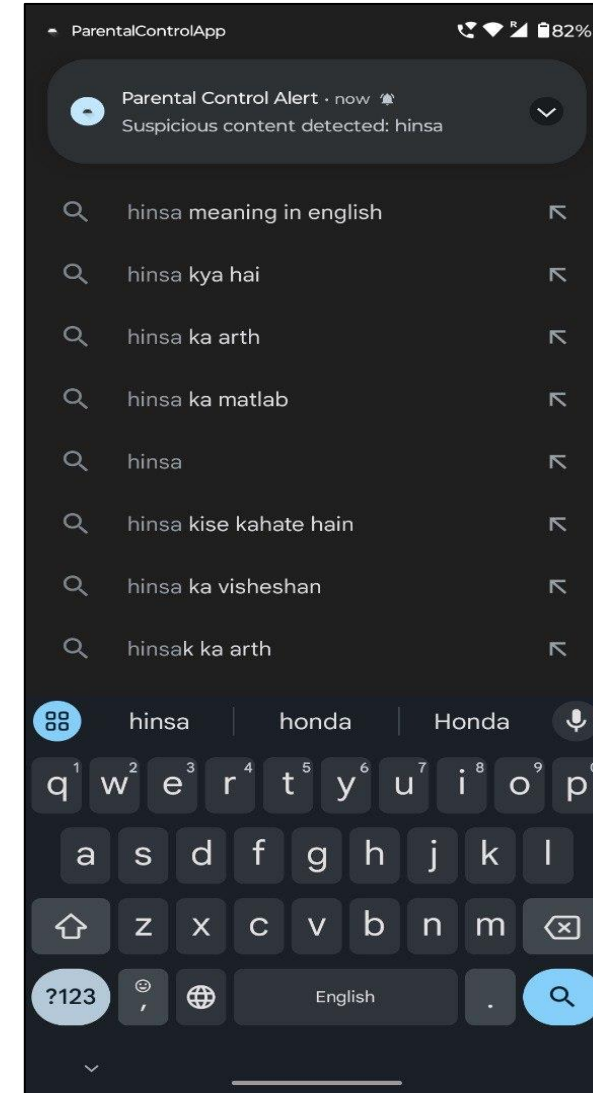
App Notification Screenshots



Restricted App Alert



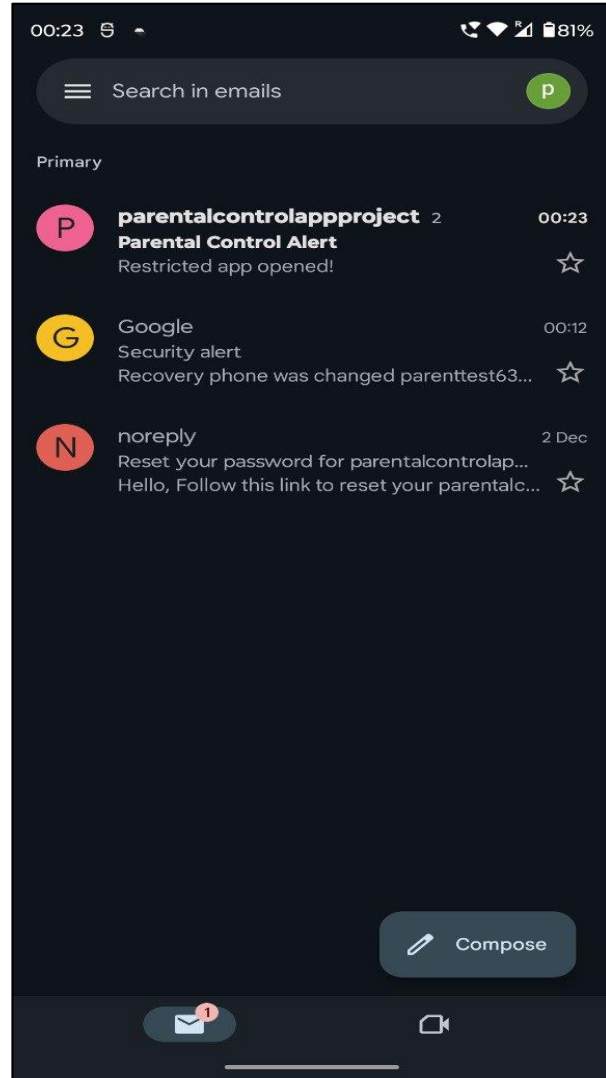
English Keyword Alert



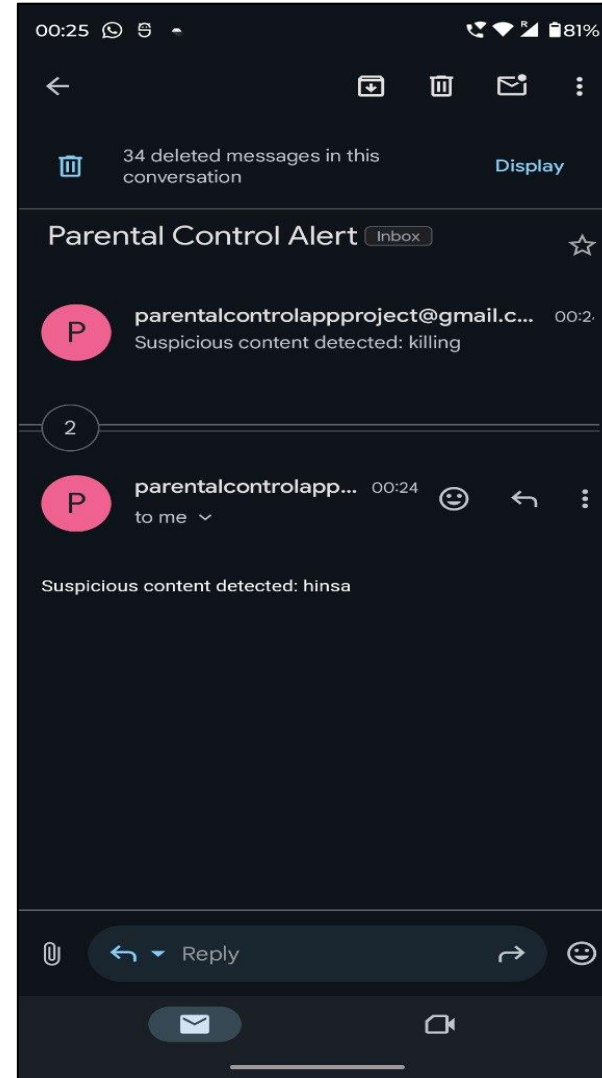
Telugu Keyword Alert



Email Screenshots



Email for Restricted App



Email for Suspicious Content



Use Cases

➤ **Parental Supervision:**

- Provides parents with real-time alerts when children use restricted apps or type suspicious keywords.

➤ **Child Safety:**

- Alerts about inappropriate or harmful activities, ensuring a safer digital environment for children.

➤ **Educational Monitoring:**

- Helps parents restrict access to non-educational apps during study hours.

➤ **Multi-Language Support:**

- Detects suspicious activities in multiple languages, including Telugu and English, for a localized approach.

➤ **Notifications for Immediate Action:**

- Instant notifications enable parents to take immediate corrective measures if needed.



Conclusion

- The Parental Control App effectively assists parents in monitoring their children's mobile activity, promoting a safer digital environment.
- Key features like suspicious keyword detection and restricted app monitoring provide proactive parental assistance.
- Notifications and email alerts ensure timely updates for better supervision.
- Built using accessible technology, the app demonstrates efficient functionality and a user-friendly interface.
- The project shows how real-time monitoring and alert systems work together to help ensure safe digital use.



References

➤ **Android Developers Documentation:**

- Accessibility services, notifications, and Android SDK guidelines.
- URL: <https://developer.android.com/>

➤ **Online Learning Platforms:**

- Udemy lectures on Android Development and Kotlin.
- YouTube tutorials for Firebase, Spring Boot, and accessibility features.

➤ **Stack Overflow Community:**

- Problem-solving discussions on Android development challenges.
- URL: <https://stackoverflow.com/>



Thank You