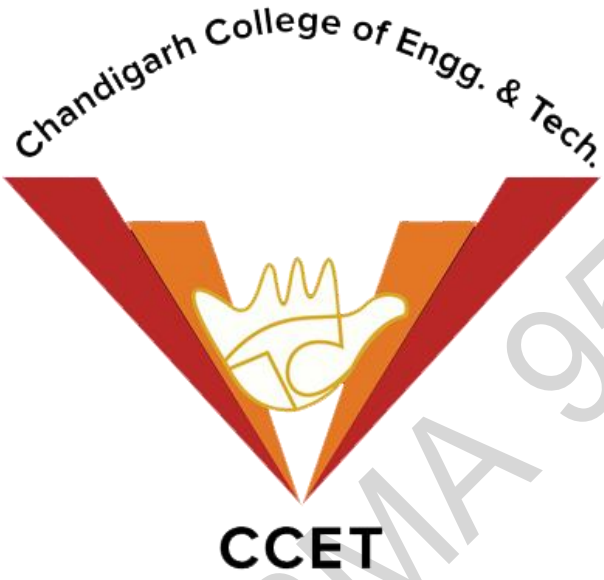
MAJOR PROJECT SYNOPSIS

SHAKIEWAKIE – A SMART ALARM SYSTEM WITH ADVANCED FEATURES



Submitted To:
SANTOSH KUMAR YADAV
LECTURER
CSE Department

Submitted By:
Vinay Sharma
9531/22
6th Semester CSE

Major Project Synopsis

SHAKIEWAKIE – A SMART ALARM SYSTEM WITH ADVANCED FEATURES

Introduction

ShakieWakie is an innovative and feature-rich Android alarm application designed to enhance the wake-up experience by integrating multiple alarm dismissal methods such as shaking the phone, solving puzzles, scanning QR codes, and using face or voice recognition. Unlike traditional alarms that can be easily dismissed with a single tap, ShakieWakie ensures that users fully wake up by introducing interactive challenges and smart wake-up techniques.

This project aims to create a smart, customizable, and engaging alarm system that helps users wake up efficiently without excessive snoozing. The application is ideal for students, professionals, and individuals who struggle with waking up on time.

Objective

The main objective of the Shake Alarm project is to deliver an intuitive and user-friendly application that enhances the interaction between the user and the device. The app aims to simplify the process of turning off an alarm by replacing buttons with motion detection, improving usability for users who may find it challenging to interact with traditional alarm clocks immediately after waking up.

Key objectives include:

- **Multi-Mode Alarm Dismissal:** Develop an advanced system including shake detection, QR code scanning, voice commands, and face recognition.
- **Motion-Based Alarm Shutoff:** Utilize the device's accelerometer to detect motion and stop the alarm upon shaking.
- **Customizable Alarms:** Provide options to customize alarm tones, vibration patterns, and snooze durations.
- **Shake Sensitivity Control:** Allow users to adjust the sensitivity of the shake detection based on their preferences.
- **Reliability:** Ensure that the alarm goes off at the designated time and the shake detection works consistently.

System Overview

The Shake Alarm application consists of several modules to ensure smooth operation:

1. Alarm Setup Module

- Users can create and schedule alarms with customizable alarm tones.
- Each alarm is stored in the device's local SQLite database, ensuring persistence even when the app is closed.

2. Shake Detection Module

- Uses the accelerometer sensor to detect shake gestures.
- Users can adjust shake sensitivity levels (Light, Medium, Hard).
- The app only stops the alarm if the shake intensity meets the defined threshold, preventing accidental deactivation.

3. Advanced Alarm Dismissal Methods

- **Math Puzzle Challenge:** Requires solving a mathematical equation to turn off the alarm.
- **QR Code/Barcode Scan:** The alarm stops only when a pre-set QR code is scanned.
- **Face Recognition:** Uses the front camera to verify the user's identity before stopping the alarm.
- **Voice Recognition:** Users must say a specific phrase to dismiss the alarm.

4. Background Alarm Module

- Utilizes Android's AlarmManager to ensure alarms function even if the app is closed.
- Implements gradual volume increase to prevent users from ignoring alarms.
- Ensures that alarms are triggered at the right time without fail.

5. User Interface Module

- Features a clean and user-friendly interface that allows users to easily set, edit, or delete alarms.
- Prioritizes simplicity and ease of navigation, with large buttons and intuitive controls.
- Supports Material UI with Dark Mode and Theming options.

Benefits

- **Convenient and Interactive Alarm Management:** The shake-to-stop feature makes it easier for users to disable alarms without searching for buttons or touching the screen, which is particularly useful when users are drowsy.
- **Reduces Oversleeping:** Multiple dismissal methods ensure users fully wake up.
- **Customizable Features:** Users can personalize the sensitivity of the shake motion and set various types of alarms, enhancing the app's versatility for different preferences.
- **Hands-Free Usage:** The app offers a more hands-free experience than traditional alarm systems, making it suitable for users who want quick, simple solutions.
- **Enhanced User Experience:** By combining alarm functionality with motion detection, the app adds an element of fun to an otherwise mundane task.

Application

The Shake Alarm app is ideal for individuals who need a creative and interactive way to manage their alarms. It is particularly useful in scenarios where using hands to turn off an alarm may be inconvenient or for users who prefer motion-based gestures for daily tasks.

Potential applications include:

- **Daily Wake-Up Alarm:** Users can set it as their primary wake-up alarm for a refreshing start to the day.
- **Reminder Alarms:** Can be used to set periodic reminders, and the shake feature makes disabling them effortless.
- **Exercise Alarms:** Could be integrated with fitness routines to motivate users by requiring them to move to stop the alarm.

Software & Tools Used

Front-End:

- **Java:** The primary programming language used for developing the app, ensuring high performance and compatibility with the Android platform.
- **Android Studio:** Integrated Development Environment (IDE) for app development, used to build, test, and debug the app.
- **XML:** For designing the User Interface (UI), making the app's layout intuitive and user-friendly.

Back-End:

- **SQLite Database:** A lightweight local database used to store alarm settings, such as time, tones, vibration patterns, and sensitivity preferences. This ensures that data is saved locally on the user's device for quick retrieval.

Sensors and APIs:

- **Android Sensor APIs:** Used to access the accelerometer for shake detection. The app relies on this sensor to capture and interpret motion events.
- **Alarm Manager:** Manages scheduled alarms in the background, ensuring that the app can wake the phone and activate alarms even when the app is closed.
- **Android Face Recognition API** (For Face Unlock)
- **Google Speech API** (For Voice-Based Alarm Dismissal)

Minimum Hardware Specifications

- **Processor:** 2.0 GHz or above
- **RAM:** 1 GB or above
- **Storage:** 50 MB of free space
- **OS:** Android 6.0 (Marshmallow) or higher
- **Sensors:** Accelerometer sensor required for shake detection

---

Future Enhancements

- **Social Alarm Feature:** Friends can challenge each other with unique wake-up tasks.
- **Parental Control Mode:** Parents can remotely set alarms for their children.
- **Emergency Wake-Up Mode:** Rings even if the phone is in Do Not Disturb mode.

Conclusion

ShakieWakie revolutionizes the traditional alarm clock by incorporating motion detection and multiple smart dismissal methods. The project is a fully functional, real-world solution designed to enhance productivity, reduce oversleeping, and ensure users wake up efficiently.

This smart alarm system is built with a strong foundation in Android development, sensor-based interactions, and customizable user experiences, making it a highly scalable and future-ready project.