

WeTalks – A Secure Social Interaction App

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Abstract

In today's digital era, mobile applications have become the primary medium for communication and social interaction. This project, WeTalks, is a cross-platform mobile application built using React Native (Expo). The application provides a secure login and signup system powered by Firebase Authentication, ensuring that only registered users can access the app. Once logged in, users are navigated to a tab-based interface with sections such as Home, Explore, and Profile.

The project demonstrates user authentication, state management, and navigation in a mobile app while ensuring a smooth and modern user experience. The design follows a modular structure, separating authentication, navigation, and UI components for scalability. This project showcases the integration of cloud-based backend services with mobile front-end technologies, providing a reliable and extendable base for future enhancements such as media sharing, chat, or social feeds.

Problem Statement

In today's digital ecosystem, users demand not only seamless interaction and content sharing but also privacy and security. While many social apps provide features like posts, messaging, and calls, few balance usability, scalability, and strong encryption. WeTalks addresses this gap by combining social interaction features with encrypted communication in a lightweight, scalable, and user-friendly application.

Objectives

- To implement secure login and registration using Firebase Authentication.
- To enable users to share posts, follow/unfollow profiles, and manage their social presence.
- To integrate a real-time chat system with end-to-end encryption.
- To provide voice room functionality for interactive group discussions.
- To ensure a smooth navigation structure using a tab-based interface.
- To demonstrate scalable cloud integration for future feature extensions (media uploads, notifications, etc.).

Scope

WeTalks is a cross-platform mobile application that runs on both Android and iOS devices. The current version includes authentication, profile management, home feed, chat, and voice rooms. In future releases, WeTalks can expand to include video calls, AI-driven recommendations, content moderation, and monetization features, making it a competitive social networking platform.

Proposed System

The application follows a client-server architecture where the mobile app (client) communicates with Firebase services (backend).

- Authentication → Firebase Authentication ensures only verified users gain access.
- Database → Firebase Firestore stores user data, posts, and chat metadata.
- Storage → Firebase Storage for media files (images, videos, voice recordings).
- Encryption → End-to-end encryption secures chats and voice communication.
- Navigation → Expo Router with tab and stack navigation for smooth user experience.

Technology Stack

Technology	Usage
React Native (Expo)	Cross-platform mobile app development
Firebase Authentication	User login & registration
Firebase Firestore	Real-time database for posts & chats
Firebase Storage	Storage for images, videos & media
JavaScript / JSX	Application logic and UI components
Node.js	Runtime environment for development
End-to-End Encryption	Secure chat & communication

Modules

- Authentication Module – Secure login & signup with profile picture upload.
- Home Feed Module – Share posts, images, and videos; like and comment.
- Profile Module – Manage profile details, followers & following system.
- Chat Module (Encrypted) – One-to-one messaging with end-to-end encryption.
- Voice Room Module – Group audio rooms for real-time discussions.

Future Enhancements

- Video calling support for one-to-one and group calls.
- Push notifications for new chats, likes, and follows.
- AI-driven content recommendation for personalized experience.
- Dark mode & UI themes for accessibility.
- Integration with payment gateways for premium features.

Conclusion

WeTalks is a modern, secure, and scalable social networking application that brings together posts, profiles, chats, and real-time voice interactions in one platform. With end-to-end encryption, it prioritizes user privacy while maintaining engaging features. The project not only demonstrates full-stack mobile app development skills but also provides a foundation for a future-ready, professional-grade social media platform.