**Abstract**

This project addresses the limitations of existing video conferencing solutions by developing a mobile application using Flutter, integrated with Firebase for backend support and Zego Cloud for real-time communication. The prevalent challenges include user-unfriendly interfaces, inconsistent audiovisual quality, and security concerns. Leveraging Flutter's cross-platform capabilities, Firebase's scalable backend services, and Zego Cloud's robust real-time communication features, the application aims to provide a comprehensive solution.

The methods employed involve modular programming practices and adherence to coding standards for a maintainable codebase. Thorough testing, including unit testing and integration testing, ensures reliable performance. User feedback and evaluation highlight the application's strengths in audiovisual streaming, chat functionality, and screen sharing, positioning it competitively in the market.

Results indicate the application's reliability, responsiveness, and high-quality audiovisual experiences, with positive user feedback affirming its user-friendly design. Data analysis reveals insightful usage patterns, guiding future enhancements. In conclusion, the project successfully addresses video conferencing challenges, offering an optimized, user-centric solution with potential for significant impact in remote communication.