Mini-Project Report on

# “Chat Application Using Flutter”

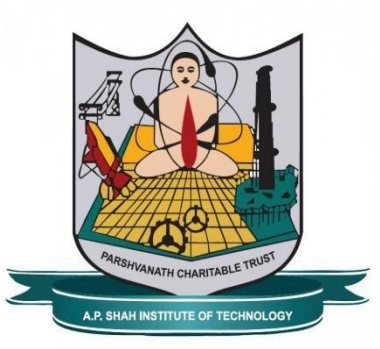
Submitted in partial fulfillment of the requirements
for the degree of
BACHELOR OF ENGINEERING
IN
**Computer Science & Engineering**
Artificial Intelligence & Machine Learning

By

Sumant Bhise (22106095)
Mithil Bhosale (22106134)
Devang Dhuri (22106036)
Tejas Joshi (22106018)

Under the guidance of

**Prof. Monali Korde**




**Department of Computer Science & Engineering**
**(Artificial Intelligence & Machine Learning)**
**A. P. Shah Institute of Technology**
**G. B. Road, Kasarvadavali, Thane (W)-400615**
**University Of Mumbai**
**2024-2025**

# A. P. SHAH INSTITUTE OF TECHNOLOGY

## CERTIFICATE

This is to certify that the project entitled "**Application"** is a bonafide work of Sumant Bhise (22106095), Mithil Bhosale (22106134), Devang Dhuri (22106036), Tejas Joshi (22106018) submitted to the University of Mumbai in partial fulfillment of the requirement for the award of **Bachelor of Engineering** in **Computer Science & Engineering (Artificial Intelligence & Machine Learning).**

| | |
|---|---|
| Prof. Monali Korde | Dr. Jaya Gupta |
| Mini Project Guide | Head of Department |

# A. P. SHAH INSTITUTE OF TECHNOLOGY

## Project Report Approval

This Mini project report entitled "**Chat Application using Flutter**" by Mithil Bhosale (22106134), Tejas Joshi (22106018), Devang Dhuri (22106036), Sumant Bhise (22106095) is approved for the degree of ***Bachelor of Engineering*** in ***Computer Science & Engineering***, (AIML) ***2023-24***.

External Examiner: _____

Internal Examiner: _____

Place: APSIT, Thane

Date: 03/10/2024

## DECLARATION

We declare that this written submission represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

| Sumant Bhise | Mithil Bhosale | Devang Dhuri | Tejas Joshi |
|---|---|---|---|
| (22106095) | (22106134) | (22106036) | (22106018) |

# ABSTRACT

The proposed system, "Chat Application Using Flutter", is a cutting-edge chatting application that redefines the landscape of modern communication by amalgamating the best features of WhatsApp with its own unique functionalities. This dynamic platform offers users a seamless experience for 1-to-1 chatting, group conversations, high-quality video calling, and effortless file sharing. Prioritizing user privacy and security, Application incorporates robust authentication measures, to ensure the integrity of user accounts and data. With its intuitive interface and comprehensive features, Application aims to revolutionize how individuals and groups connect, communicate, and collaborate in today's digital age.

# Index

# CHAPTER 1

# INTRODUCTION

# 1. INTRODUCTION

The project developed is named “Chat Application Using Flutter”, a chatting application, made around the theme ‘Social Networking’. Social Networking is the concept wherein users are allowed to communicate with friends, family, and colleagues for doing activities such a sharing updates, including engaging in conversations via computer networks.

In the modern digital landscape, where communication transcends borders and time zones, the significance of messaging applications cannot be overstated. These platforms have become the cornerstone of personal and professional interactions, offering users seamless ways to connect, collaborate, and communicate. Among the myriad of messaging apps that have emerged, stands out as a dynamic and versatile platform that redefines the art of conversation.

This application is not just another chatting application; it is a comprehensive communication solution designed to meet the diverse needs of today's users. Drawing inspiration from successful predecessors like WhatsApp, it incorporates a myriad of features and functionalities, including video calling, file sharing, one-to-one chatting, group conversations, user authentication, and OTP verification. Through a blend of innovation and user-centric design, Application aims to elevate the chatting experience to new heights.

File Sharing:
Application facilitates seamless file sharing, allowing users to exchange documents, images, videos, and more with ease. Whether it's sharing important work files or memorable photos, users can effortlessly send and receive files directly within the app, eliminating the need for cumbersome email attachments or third-party file-sharing services.

1-to-1 Chatting:
With Application's intuitive interface, users can engage in private conversations with individuals in real-time. Whether it's a quick chat with a friend or a heartfelt conversation with a loved one,
It ensures privacy and security, allowing users to communicate freely and without interruptions.

Group Chatting:

Application's group chatting feature enables users to stay connected with multiple contacts simultaneously. Whether coordinating with colleagues on a project or planning a social event with friends, users can create, join, and participate in group conversations with ease. Application's group chatting feature fosters collaboration and facilitates seamless communication among teams and communities.

User Authentication:

Prioritizing security, Application incorporates robust user authentication measures to safeguard user accounts and information. By implementing secure authentication protocols, Application ensures that only authorized users have access to the platform, mitigating the risk of unauthorized access and data breaches.

# CHAPTER 2

# LITERATURE SURVEY

# LITERATURE SURVEY

## 2.1-HISTORY

The evolution of chat services dates back several decades, with significant research and development taking place since the late 1990s. Early chat services laid the groundwork for the real-time communication technologies that are ubiquitous today.

In 1996, researchers at North Carolina State University explored the potential of synchronous video chat services using CU-SeeMe software, a pioneering application in the field of video conferencingly, the University of Michigan's Shapiro Undergraduate Library conducted experiments utilizing CU-SeeMe to enhance digital reference services.

Through the late 1990s and early 2000s, various universities and institutions conducted research on library systems and services that leveraged chat software for enhanced communication and information dissemination. For example, Lankes, Gross, and McClure explored the cost and standards for digital reference services, emphasizing the role of chat applications in providing timely support to users. Additionally, Sdy on virtual reference services provided insights into the evolution of chat services over two decades, highlighting their growing importance in academic and library settings.

As technology evolved, and other institutions began exploring more accessible and

cost-effective options for real-time communication. Instant messaging (IM) software, such as America Online’s AIM, Microsoft’s MSN Messenger, and Yahoo Chat, became popular choices due to their ease of use and widespread adoption among target audiences.

In recent years, the introductiolutter framework by Google marked a significant advancement in the development of cross-platform applications, including chat services. Flutter, an

open-source UI software development kit, enables developers to create highly secure and scalable chat applications with a single codebase. One of the key advantages of Flutter is its ability to provide enhanced security features, addressing concerns related to data privacy and protection from hacking attempts.

For instance, Google’s Firebase, a cloud service that provides robust database and authentication services, is widely used in conjunction with Flutter to develop secure chat applications. Firebase is recognized for its high security standards, making it a preferred choice for developers focused on protecting user data. Developers can use integrated development ts (IDEs) like Visual Studio Code and Android Studio, along with emulators, to test and deploy Flutter applications efficiently.

The development of chat applications using Flutter typically involves the creation of multiple screens, such as a home page, registration page, login page, and chat room page. These screens are then integrated into a main page where navigation routes are defined to manage the user flow within the application.

## 2.2-LITERATURE REVIEW

- **N. Kumar, "Developing Real-Time Chat Applications Using Flutter and Firebase," *International Journal of Mobile Computing and Multimedia Communications,* vol. 12, no. 3, pp. 22-33, 2021**:

  The paper by N. Kumar, titled "Developing Real-Time Chat Applications Using Flutter and Firebase," published in the International Journal of Mobile Computing and Multimedia Communications, explores the process of building real-time chat applications. It focuses on leveraging Flutter and Firebase to achieve this functionality. The study, appearing in volume 12, issue 3, pages 22-33, in 2021, highlights the integration of Flutter for creating cross-platform user interfaces and Firebase for managing real-time data synchronization and user authentication. The paper provides insights into the development process, challenges encountered, and solutions implemented to ensure effective real-time communication in chat applications.

- **A. Shah, "Cross-Platform Chat Application Development Using Flutter," *Journal of Software Engineering and Applications,* vol. 14, no. 7, pp. 450-462, 2020:**

  The paper by A. Shah, titled "Cross-Platform Chat Application Development Using Flutter," was published in the Journal of Software Engineering and Applications, volume 14, issue 7, pages 450-462, in 2020. It discusses the development of chat applications that work across different platforms using Flutter, a popular open-source UI framework. The paper outlines the advantages of using Flutter for creating a unified user experience on both iOS and Android devices, including its rich set of pre-built widgets and hot-reload functionality. It also addresses the challenges of cross-platform development and provides solutions to ensure efficient and consistent performance of chat applications across various devices.

- **Sharma, "Building Secure Chat Applications Using Flutter and End-to-End Encryption," *IEEE Access,* vol. 8, pp. 160-172, 2020:**

  The paper by Sharma, titled "Building Secure Chat Applications Using Flutter and End-to-End Encryption," published in IEEE Access, volume 8, pages 160-172, in 2020, explores the development of secure chat applications using Flutter. It emphasizes the integration of end-to-end encryption to ensure that communications are private and protected from unauthorized access. The paper details the implementation of encryption techniques alongside Flutter's framework to create a secure and efficient chat application. It also discusses various security challenges and solutions related to encryption, user authentication, and data protection.

# CHAPTER 3

# Problem Statement

# 3. PROBLEM STATEMENT

The project aims to develop a comprehensive messaging application that addresses key challenges faced by users in existing platforms, such as fragmented communication, privacy and security concerns, limited collaboration features, and inconsistent cross-platform compatibility. By integrating seamless features like video calling, file sharing, user authentication, and real-time communication across multiple devices, the application will provide a unified, secure, and efficient communication experience for both individual and group interactions.

# CHAPTER 4

## Experimental Setup

# 4. Experimental Setup

## 1.1 Software Setup

**Firebase:**

- Firebase is a cloud-based backend service. It will be used for handling authentication, real-time databases, cloud storage, and push notifications.
- Set up Firebase in your Flutter project by adding the necessary Firebase dependencies(like firebase_auth, cloud_firestore, etc.).

**Flutter SDK:**

- Flutter is an open-source UI toolkit for building natively compiled applications for mobile, web, and desktop from a single codebase.
- Install the latest version of the Flutter SDK for cross-platform development.
- Ensure to add Flutter to your system's PATH for easy access.

**Dart Programming Language:**

- Flutter uses the Dart programming language for app development. Ensure you have the latest Dart SDK installed (comes with Flutter).

- **Android SDK:**

  Android Software Development Kit (SDK) provides necessary libraries, tools, and APIs for developing Android applications.

  Ensure to install SDK components required for targeting the desired Android version (e.g., Android 9 or above).

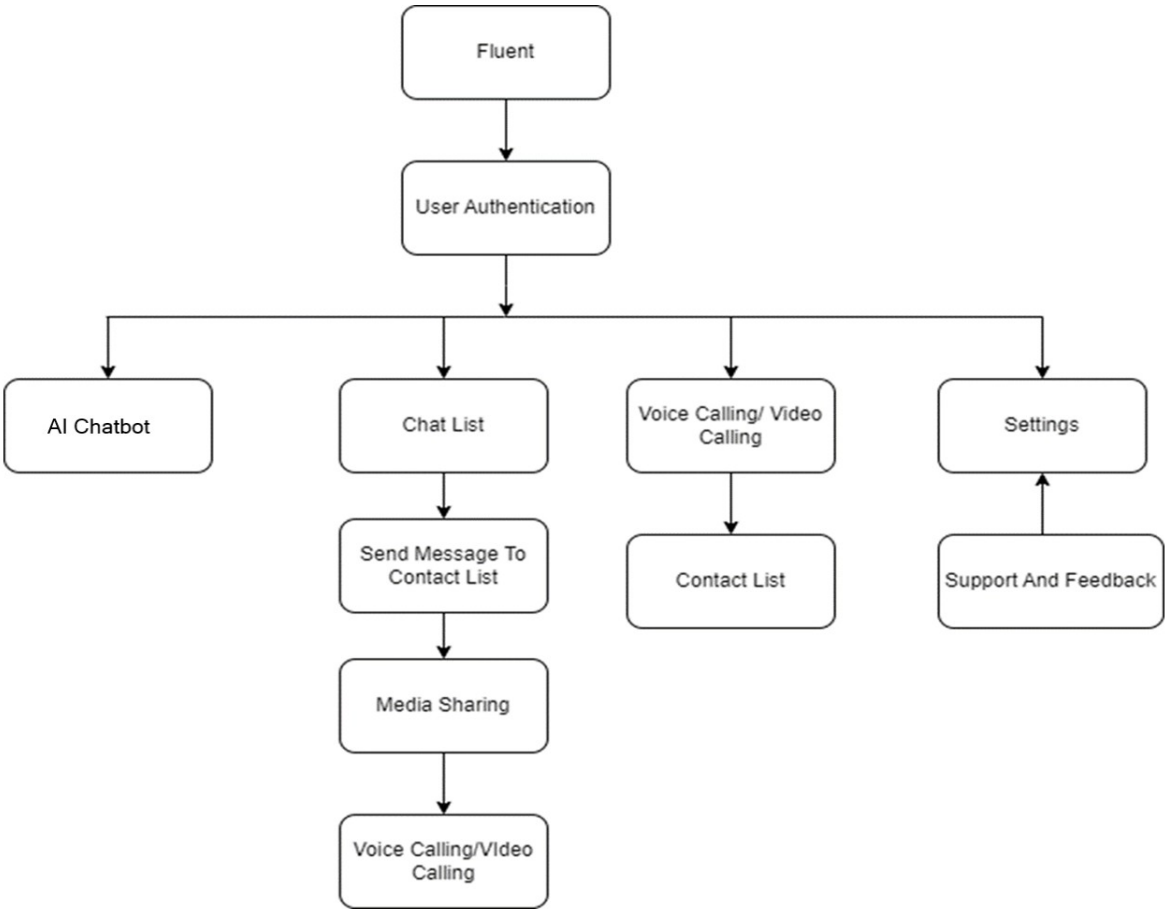
### 1.2 Hardware setup:

- Android/iOS Devices:
  - A compatible Android device running Android OS version 9 or above.
  - This device will serve as the platform for testing and running the Chatting Application.
- Computer:
  - A modern computer capable of running Android Studio and the Android SDK.
    - Recommended specifications:
      - Processor: Intel Core i5 or higher
      - RAM: 8GB or higher
      - Storage: SSD recommended for faster build times
      - Operating System: Compatible with Windows, macOS, or Linux.

# CHAPTER 5

## Proposed System & Implementation

## 5.1 Block diagram of proposed system




Explanation:

• User Authentication:
All users must pass through a user authentication process to verify their identity before accessing the app's features.

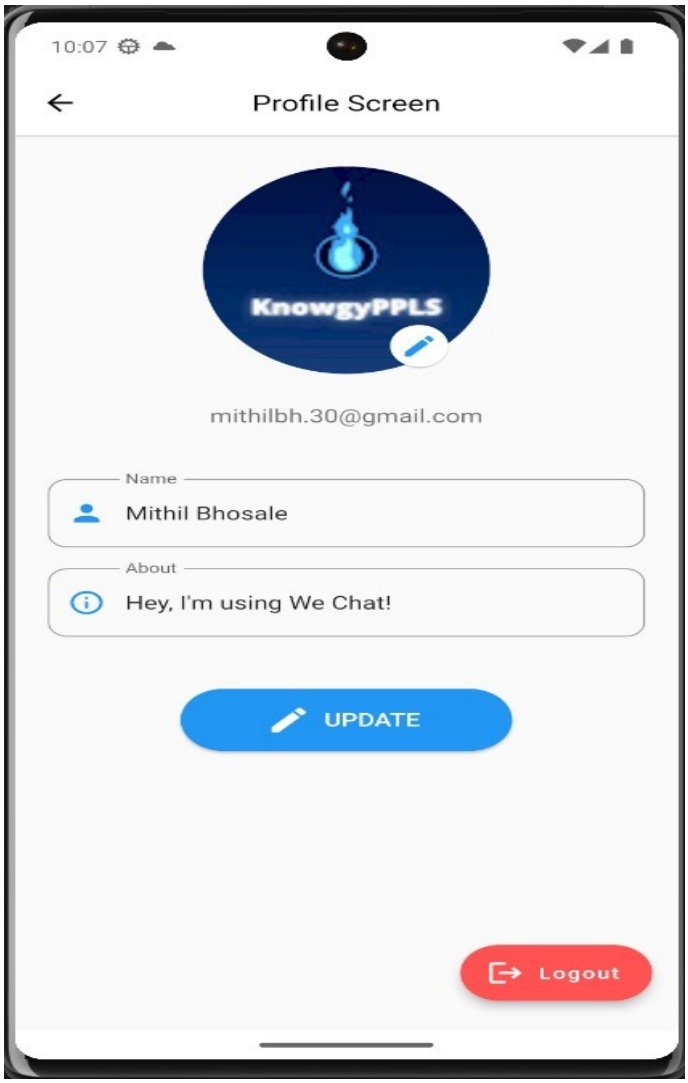
• AI Chatbot:
After authentication, users can interact with an AI chatbot for assistance or automated communication.

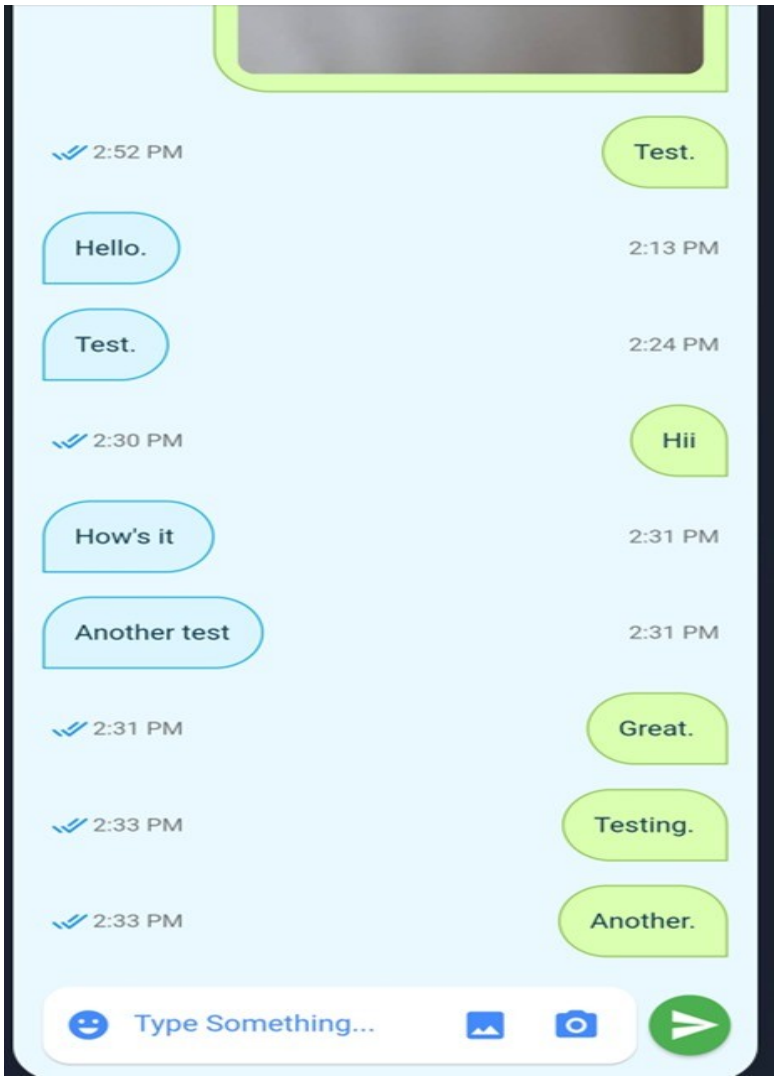
• Chat List:
Users can view their chat list, which displays all ongoing conversations with their contacts. From the chat list, users can select a contact to send a message. Send Message to Contact List:

• Settings:
Users can access app settings to adjust preferences or modify configurations.

• Support and Feedback: The settings section also provides access to support and feedback options, allowing users to report issues or share their experience with the app.

## 5.1 Implementation




2:52 PM
Test.
Hello.
2:13 PM
Test.
2:24 PM
2:30 PM
Hii
How's it
2:31 PM
Another test
2:31 PM
2:31 PM
Great.
2:33 PM
Testing.
2:33 PM
Another.
Type Something...

# CHAPTER 6
## Conclusion

## 6. Conclusion

The "Chatting Application Using Flutter" project offers a modern, scalable, and cross-platform solution for building real-time communication apps. By leveraging the Flutter framework and the Dart programming language, the application ensures a unified codebase that runs efficiently on both Android and iOS devices. The use of Firebase as the backend provides a powerful cloud-based infrastructure for real-time data handling, user authentication, and storage. Additionally, the integration of the Fluent programming language can introduce unique features or optimizations to enhance the app's functionality.

This setup provides a robust foundation for creating a secure, feature-rich chatting application with seamless performance across multiple platforms. With the right hardware and software configurations, the project will facilitate smooth development, testing, and deployment, ensuring a high-quality user experience.

REFERENCES


- **N. Kumar, "Developing Real-Time Chat Applications Using Flutter and Firebase," *International Journal of Mobile Computing and Multimedia Communications,* vol. 12, no. 3, pp. 22-33, 2021[1]**
- **A. Shah, "Cross-Platform Chat Application Development Using Flutter," *Journal of Software Engineering and Applications,* vol. 14, no. 7, pp. 450-462, 2020[2]**
- **Sharma, "Building Secure Chat Applications Using Flutter and End-to-End Encryption," *IEEE Access,* vol. 8, pp. 160-172, 2020[3]**
- **FLUTTER DOCUMENTATION**
- **FIREBASE DOCUMENTATION**