Tasty Trails - Project Report

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1 Introduction

Tasty Trails is a mobile application designed to regulate surplus food and reduce food wastage. By creating a digital platform to connect individuals and organizations with surplus food to people in need, the app addresses a critical global issue of food sustainability. The application's seamless interface, coupled with modern technologies like geolocation and database management, ensures that surplus food reaches the right hands efficiently. Additionally, Tasty Trails fosters community engagement by encouraging users to actively participate in reducing food waste.

2 Purpose of the Application

The purpose of Tasty Trails is multi-faceted and focuses on building a more sustainable food ecosystem:

- **Minimizing Food Wastage:** Providing a platform to redistribute surplus food to those in need.
- **Facilitating Connections:** Bridging the gap between donors and recipients through an intuitive user interface.
- **Encouraging Sustainable Practices:** Promoting awareness and action toward reducing environmental impact.
- **Expanding Food Literacy:** Offering a recipe feature to educate users on utilizing available food creatively.

3 Application Features

Tasty Trails integrates several key features to provide a holistic solution for food redistribution and sustainability:

- **User Authentication:** Secure login and signup functionality using Firebase Authentication, ensuring data privacy and user management.
- **Post Creation:** A streamlined process for users to upload details about surplus food, including images and precise location tagging.
- **Map Integration:** Apple Maps integration enables users to locate and view posts in their vicinity.
- **Recipe Feature:** The application includes a recipe section where users can explore creative ways to utilize surplus food. This feature allows users to search for recipes based on ingredients they have, fostering food literacy and reducing waste.
- **Profile and Rewards:** Each user has a personalized profile displaying their details, contributions, and rewards, motivating active participation.
- **Search by Location:** Users can search for posts within a specified radius, making it easier to connect with nearby donors or recipients.

- **Single Post View:** Users can click on a post to view detailed information, including food descriptions, images, and donor contact information.

4 Technologies Used

The robust functionality of Tasty Trails is powered by the following technologies:

- **SwiftUI:** For designing the app's responsive and dynamic user interface.
- **Firebase:** Utilized for authentication, Firestore database for storing user and post details, and storage for image handling.
- **MapKit:** Provides geolocation and mapping services, enabling users to pinpoint and view nearby posts.
- **Imgur API:** Facilitates efficient image uploading and storage for food posts.
- **CoreLocation:** Ensures accurate geolocation tracking for posts and user activities.

5 Application Flow

5.1 Login Page

The application begins with a secure login page. Firebase Authentication manages user credentials to ensure data security. Users can log in using their registered email and password.

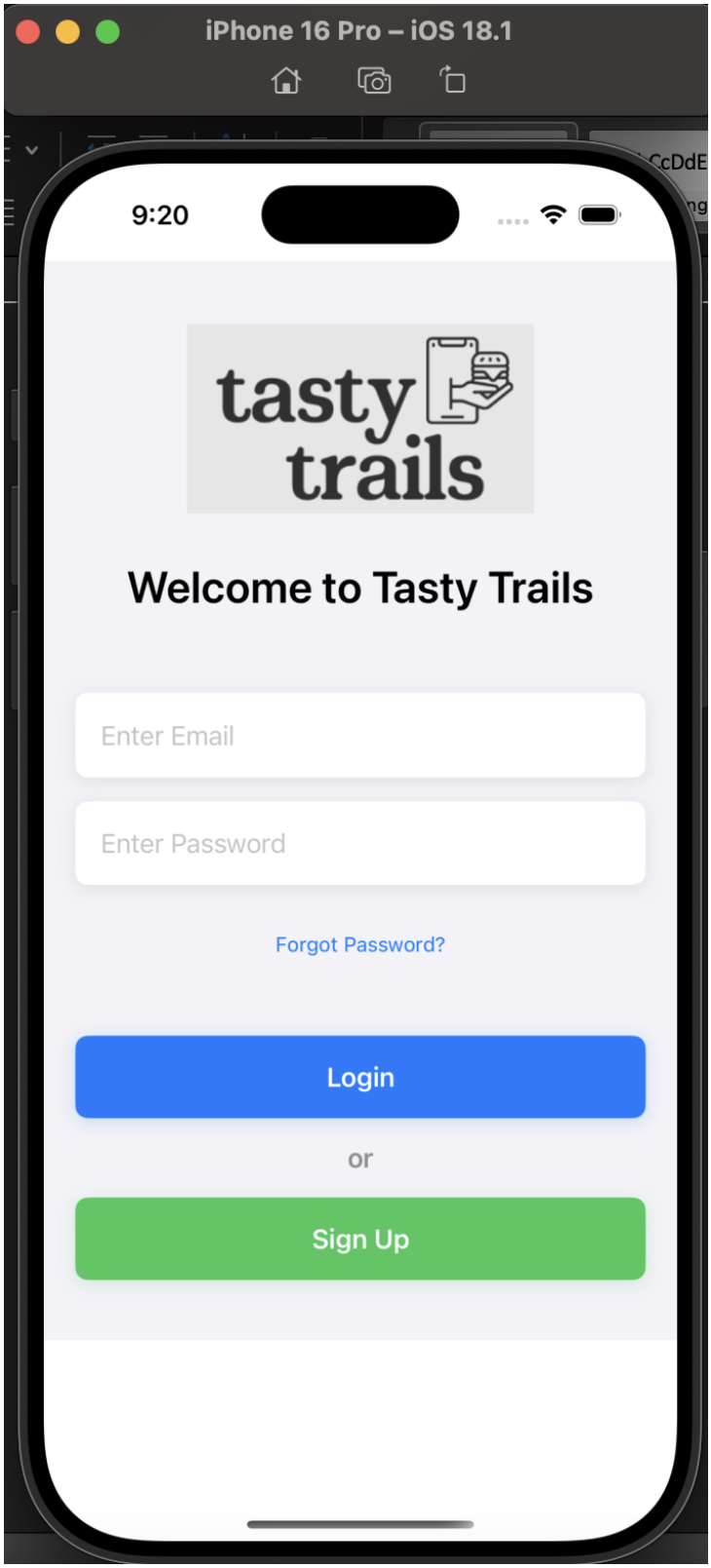

Figure 1: Login Page

5.1.1 Signup and Forgot Password Pages

Signup Page: New users can create an account by providing basic details like name, email, and password. Firebase Authentication securely stores this data.

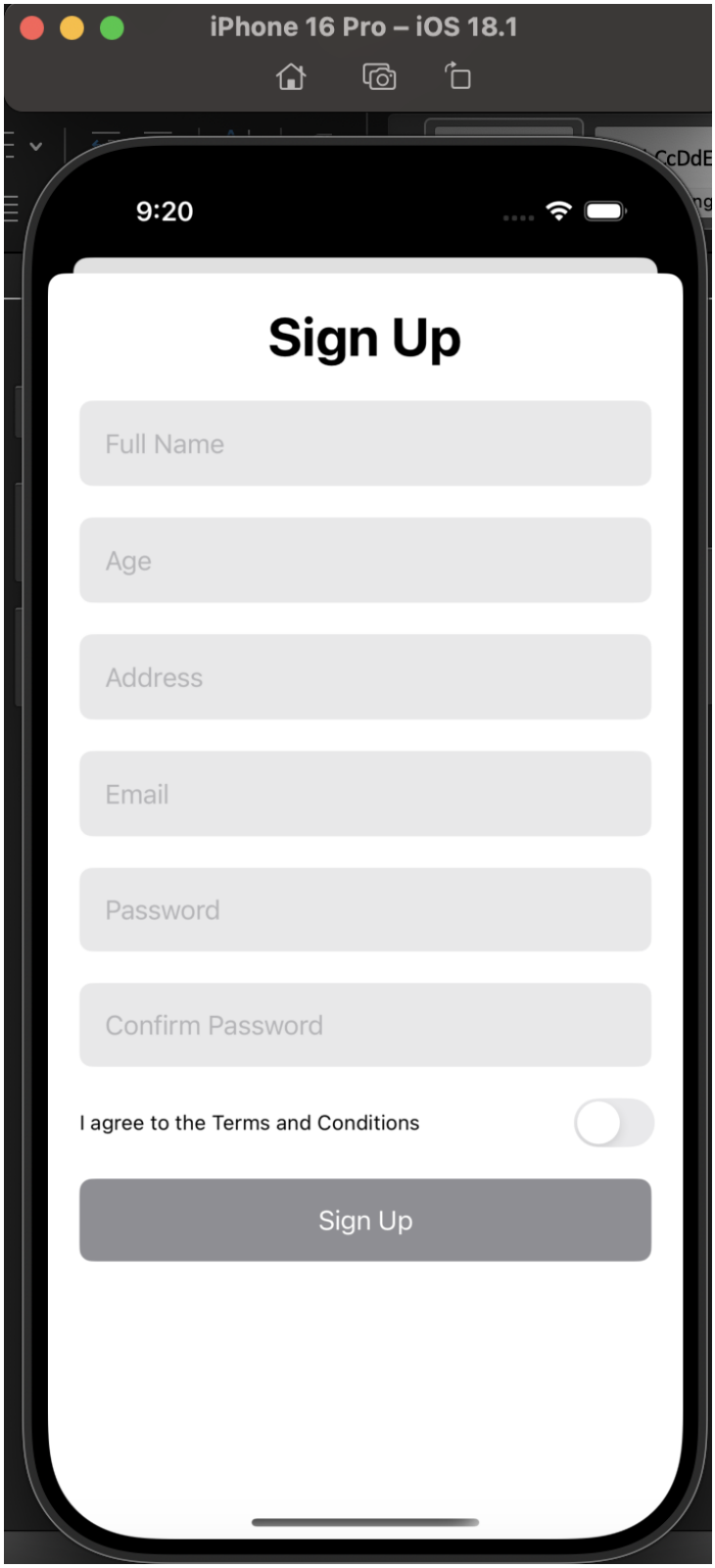

Figure 2: Signup Page

Forgot Password Page: Users can reset their password by entering their registered email address. Firebase Authentication sends a password reset link to the user's email.

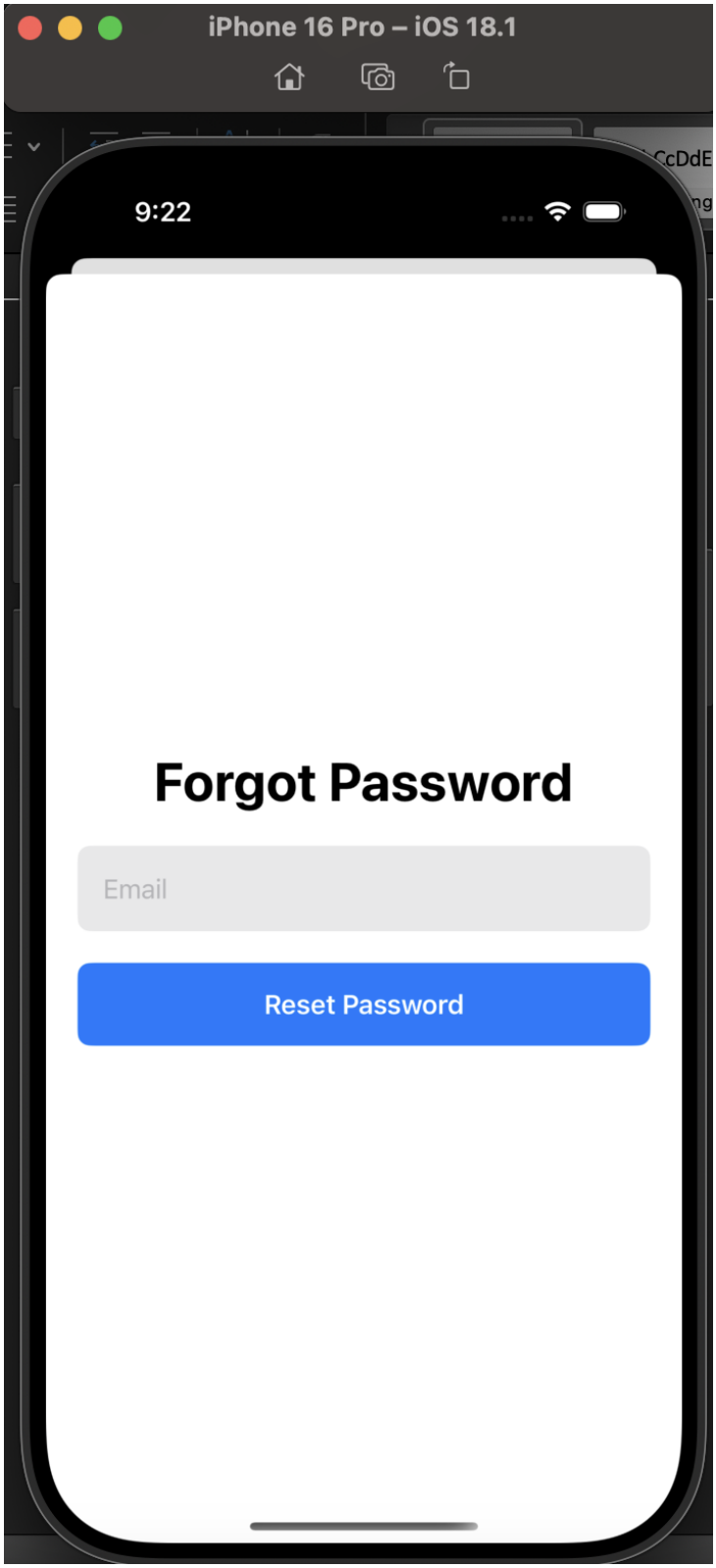

Figure 3: Forgot Password Page

5.2 Creating a Food Post

Users can create a post by entering details such as the food description, uploading images, and tagging the location. The geolocation is either manually entered or auto-detected,

ensuring accurate tagging. Posts are stored in Firestore and displayed on the app for nearby users to see.

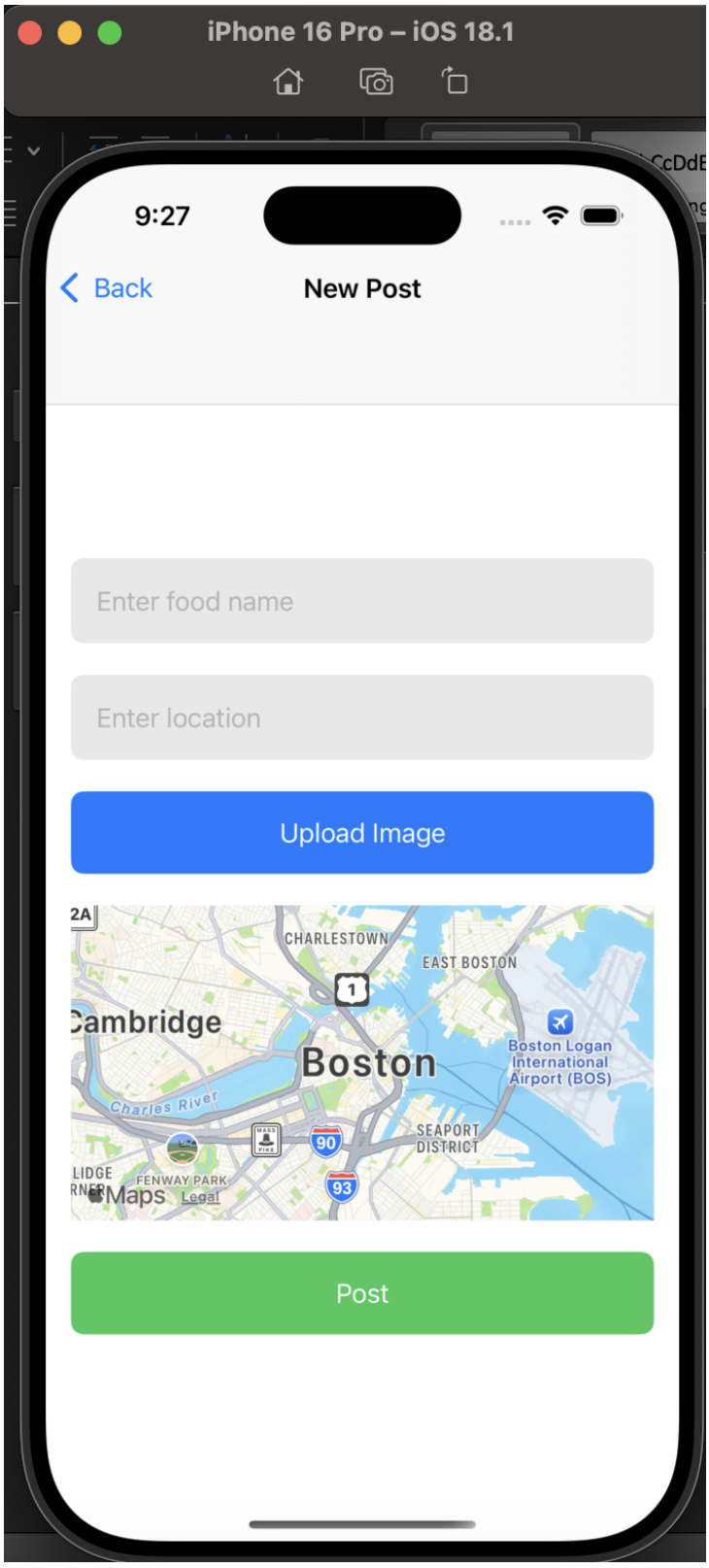

Figure 4: Creating a Food Post

5.3 Viewing Nearby Posts

The app provides a map-based view of nearby posts using MapKit integration. Users can view details of posts, contact donors, and navigate to the location.

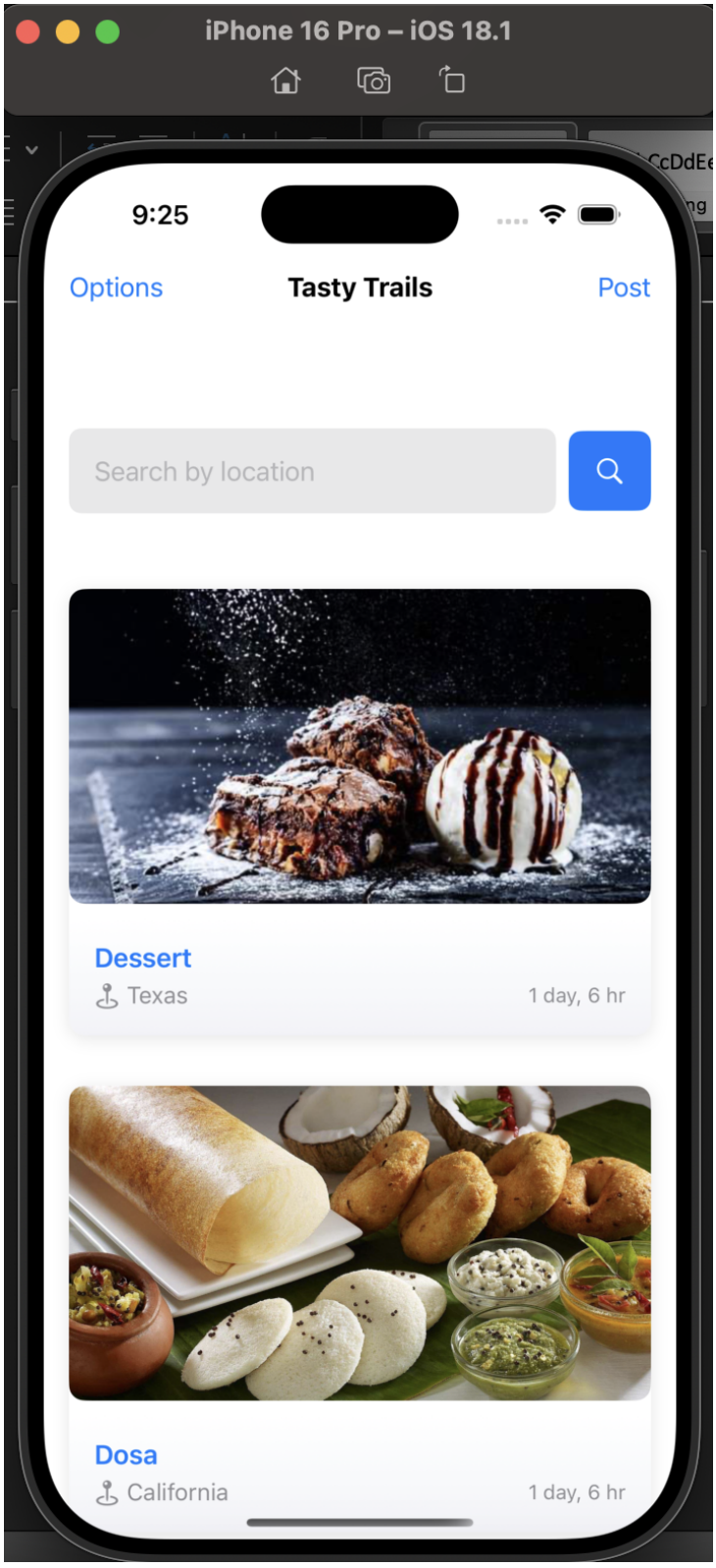

Figure 5: Viewing Food Posts

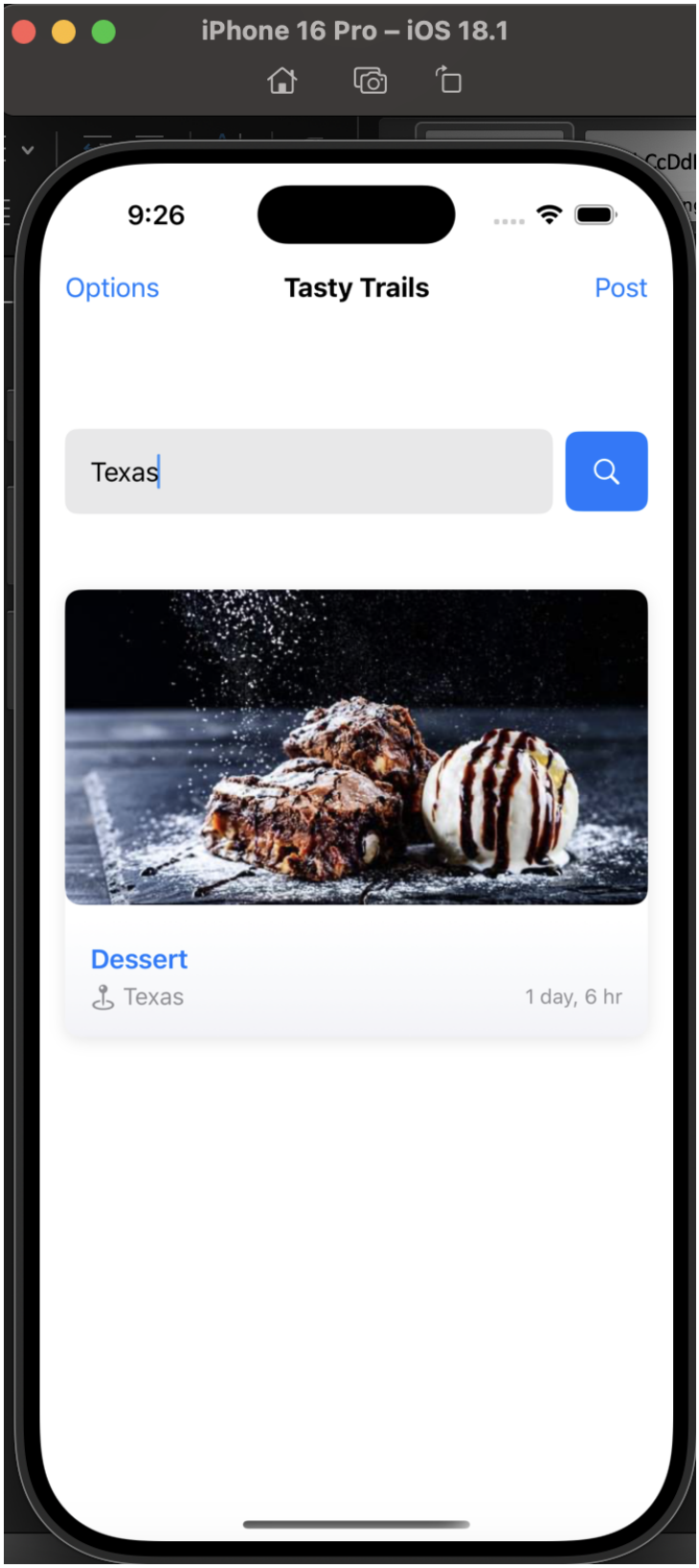

Figure 6: Viewing Food Posts

5.4 Single Post View

When users click on a post, they are directed to a detailed view. This page includes the following:

- Food image, description, and location.
- Donor contact information (if shared).
- Navigation option to the donor's location.

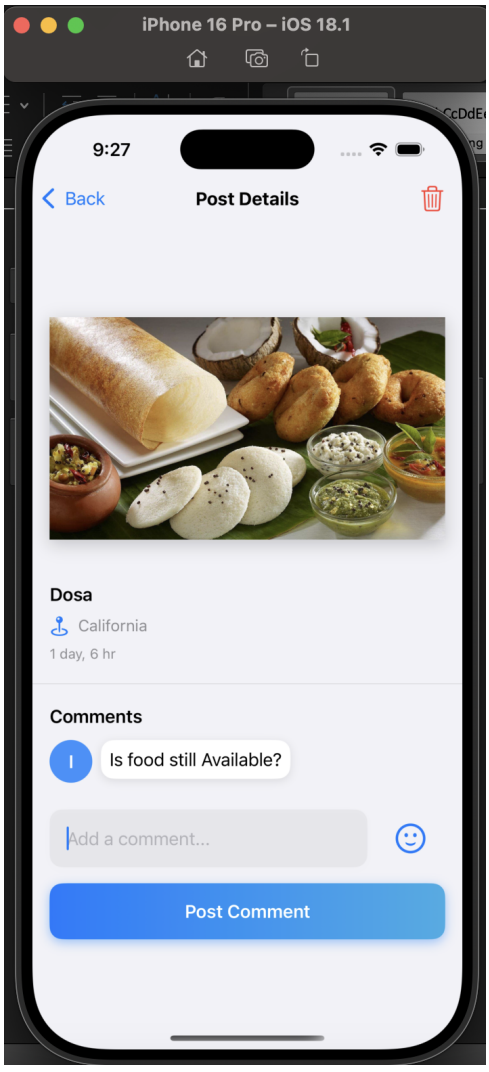

Figure 7: Single Post View

5.5 Recipe Feature

A standout feature of Tasty Trails is the recipe section. Users can search for recipes based on available ingredients, making it easier to utilize surplus food creatively. This feature reduces food wastage by inspiring users to cook innovative dishes using leftover ingredients.

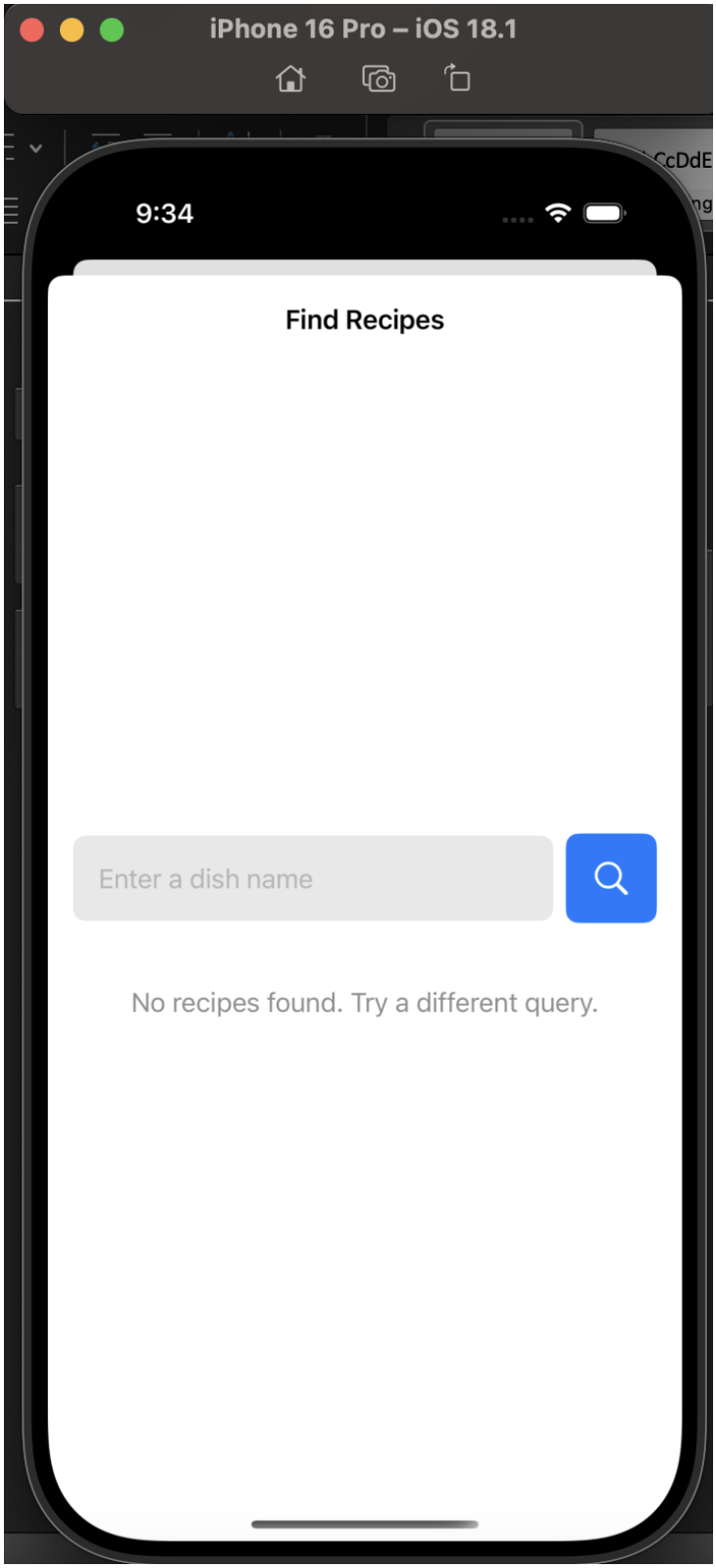

Figure 8: Recipe Feature

5.6 User Profile and Rewards

The profile section provides users with an overview of their contributions. It includes:

- Personal details (name, age, address) fetched securely from Firebase.

- A reward system that motivates users through badges and milestones.
- A bar chart displaying the number of posts made, encouraging users to contribute more.

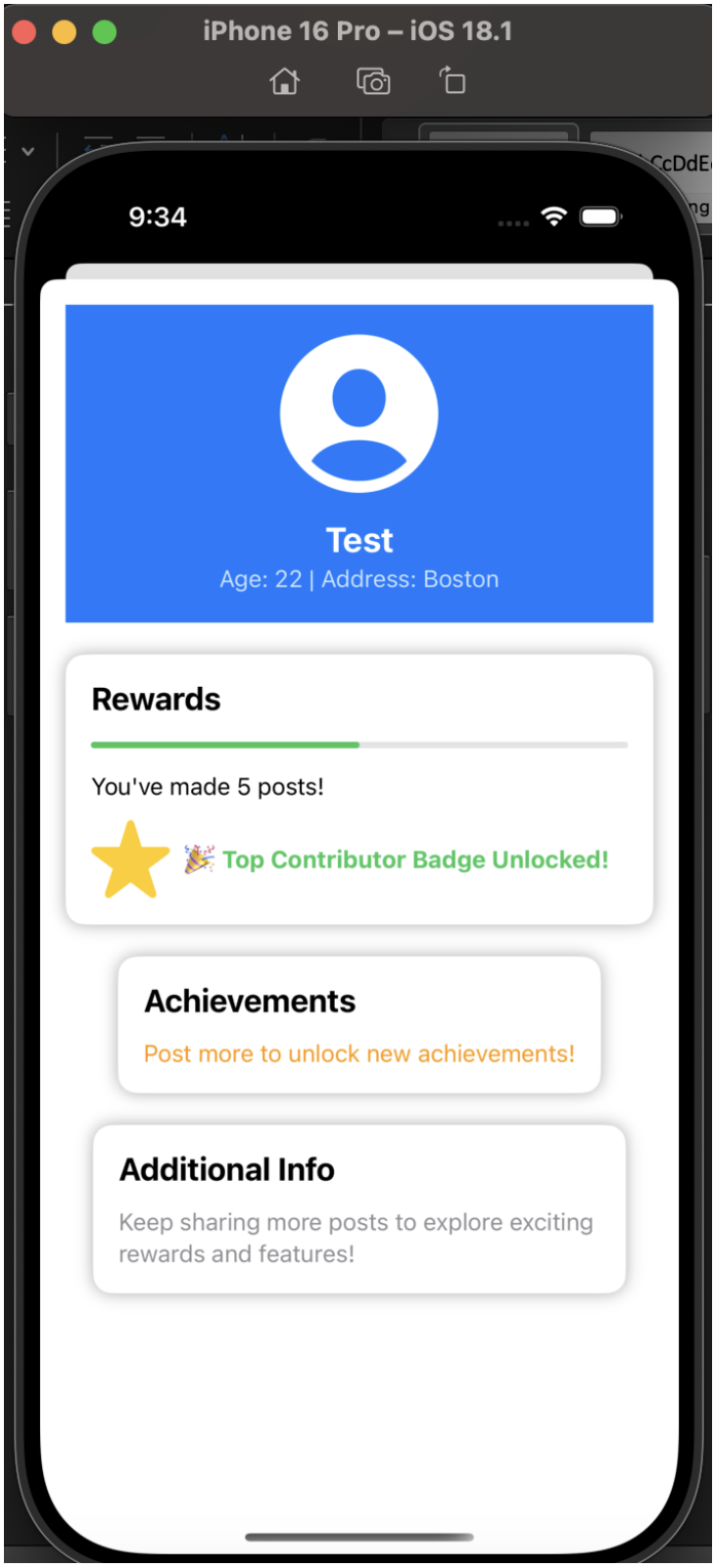

Figure 9: User Profile and Rewards

6 Future Scope

The app has the potential to expand its impact through:

- **Integration with NGOs:** Partnering with food banks and charitable organizations for streamlined food distribution.
- **Real-Time Notifications:** Alerts for nearby posts to improve response time.
- **Advanced Analytics:** Tracking user contributions and providing insights on food redistribution.
- **Blockchain Transparency:** Ensuring end-to-end tracking of food donations for enhanced trust.
- **Multilingual Support:** Catering to users across diverse regions and languages.

7 Challenges Faced

The development of Tasty Trails came with its share of challenges:

- Accurate geolocation tagging for posts and users.
- Ensuring a seamless experience while integrating APIs for authentication, image handling, and mapping.
- Maintaining secure and scalable user data storage on Firebase.

8 Conclusion

Tasty Trails is a comprehensive solution aimed at minimizing food wastage and fostering a sustainable society. By leveraging modern technologies and a user-friendly interface, the app effectively bridges the gap between surplus food donors and recipients. Future enhancements will further amplify its impact and usability.

References

- Firebase Documentation
- Apple MapKit Documentation
- Swift Documentation