# Design and Implementation of a Secure Women-Only Networking Platform with Identity-Based Access Control

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*Abstract*— **In today's digital world, there are many networking applications and platforms to connect each other. But all those platforms are generic in nature, that means it was for everyone not specifically for certain domains or for the women community. So, due to these reasons in existing platform we can see large number of fake accounts, privacy and security issues. Because of this reason many of the introverted women do not feel safe to connect through these types of platforms which are for everyone. To address this problem, we came across a solution called "FemNet" which is a mobile based networking application which is developed by using the modern technologies like Flutter and Firebase. Flutter facilitates us with the cross-platform development and the Firebase have many backend services like Firebase Auth, Firebase Console, Cloud Firestore, Cloud Storage, Firebase Cloud Messaging were all used for secure login, real time data storage and transmission. All these technologies are utilized perfectly to develop the user-friendly mobile application which is exclusively for the passionate women community. No other men are allowed to the platform and duplicate accounts were also restricted. Every user's identity is checked while logging in to the platform to provide the user the most secure and trusted environment. By using the FemNet application the women can confidently use the platform without the fear of anything and easily connect to the other likeminded peoples. The system can be further enhanced in future with AI integration and advanced communication features.**

***Index Terms*— *Cloud Database, FemNet, Firebase, Flutter, Identity Verification, Like-Minded People, Mobile Application, Women Community, Women Empowerment, Women Networking Application, Women-Only Platform, Women Apps.***

## I. INTRODUCTION

In today's generation almost all the peoples are using one or the other social media applications to share their ideas, their emotions, to interact with other, to build a good connection, or to stay connected with friends, peers and family. In this Genz generation there is no concept of gender inequality, because women present in each and every domain, irrespective of their strength and capacity, they have a caliber to win against the men. Even though the women were this mush equal to men, and the women empowerment is in its peak, there are some women who are introverted in nature. And for that they lag behind to live their life according to their passion. So, these kinds of introverted women can't make them available in these currently existing social media applications because of the security and the privacy issues and the fear of getting judged so easily. So, for that reason those introverted women need a much safer women only networking platform to connect with the like-minded peoples so that they can also grow according to their passion.

In the existing platforms there is a security and a privacy issue. There is a fear of fake accounts, fake identities, fear of getting judged so easily, bullying and so on. Due to all these reasons many introverted women don't feel safe in those platforms. Even though they have a great passion and a good skill, they will always need a company who have a similar interest, but can't find those connections in the existing platforms due to the insecurity. For that reason, they need a secure and trustworthy platform where those introverted women feel safe to make connections with the like-minded peoples and live according to their interest and grow together.

As a solution to this problem, there is a need of developing one secure user-friendly application, where any of the women can safely interact and connect with each other without any hesitation. Therefore, we designed and developed a networking mobile application called "FemNet" which is exclusively for the women. Here in this platform, they can freely access the environment and based on

the interest the application will suggest the peoples and the users can connect with whom they needed and freely interact, communicate and grow according to their passion and interest.

This platform mainly uses the Flutter and Firebase technologies. It was designed with Flutter for the frontend and backend services are provided by the Firebase. So together it will provide the easier, simpler, user-friendly, interactive application. This platform mainly focused on providing safety, trust and comfort of the users. This was mainly designed for those peoples who are highly passionate and skilled but feel hesitated and uncomfortable to express themselves in the existing social media platforms. Hence, we decided to provide them a supportive, user-friendly environment where they can grow confidently and follow their passion without any hesitation.

## II. LITERATURE SURVEY

In today's era, Mobile applications are widely used for communication and networking. More specifically social media applications are used for connecting with others and sharing their thought and build the communication. But in these platforms, there is a lot of fake users, privacy and security issues. This affects user trust, especially for women who want a safe and comfortable platform to connect and build connections. Therefore, it is important to develop a secure networking system with proper safety measures.

Alizai et al. in [1] discussed the importance of secure authentication in mobile applications. Their study explained how authentication systems help in protecting user accounts from unauthorized access. The research showed that secure login systems improve user trust and protect personal data. In [2], Bhardwaj et al. explained how Firebase can be used as a real-time database for mobile applications. Their work showed that Firebase allows fast data storage, real-time updates, and easy integration with mobile apps. This technology helps applications provide smooth communication and instant data storage. Huang et al. studied security challenges in mobile cloud computing systems. Their research in [3] explained how cloud platforms provide data storage and communication services while maintaining security. The study highlighted the importance of secure cloud services for modern applications. Kumar et al. explained the benefits of using Flutter for developing cross-platform mobile applications. Their study in [4] showed that Flutter allows developers to build applications that work on different devices using a single codebase. This reduces development time and improves performance. Zhou et al. analyzed privacy and security issues in social networking applications. Their research in [5] showed that users often face problems such as fake accounts, privacy risks, and data misuse. This study highlights the need for secure networking and communication platforms with proper identity verification. Behl and Behl in [6] explained common security threats in mobile applications and methods to prevent them. Their research highlighted the importance of authentication, secure storage, and access control. These security methods help protect user information and improve application safety. Singh et al. discussed the design of real-time chat applications using cloud services. Their study in [7] showed that cloud-based chat systems allow instant communication and improve user interactions. Verma and Patel studied the importance of secure user identity verification in online platforms. Their research in [8] explained that identity verification helps reduce fake accounts and improves trust among the users. They also mentioned that proper verification systems to make users feel safe during the interacting with other users. Chen et al. in [9] explained the role of cloud storage in mobile applications. Their study showed that cloud storage helps applications to store large amounts of data securely and allow users to access their data anytime. Cloud systems also improve reliability and prevent data loss. Rahman and Islam studied real-time communication systems in mobile applications. Their research in [10] showed that real-time messaging improves user engagement and makes communication faster and more effective. The study also explained that cloud-based messaging systems provide instant message delivery without any delay. Kaur and Sharma studied how mobile applications helps to build online communities. Their work in [11] showed that mobile apps allow users to interact, share their thoughts, and helps to build supportive groups easily. They explained that interest-based communities help users to feel more connected and active. However, the study did not focus on women-only networking platforms. Lopez et al. in [12] presented user experience in social networking applications. Their study highlighted that simple UI design and easy navigation improves user

engagement. If the application interface is clear and responsive, users may feel more comfortable using it regularly. Ahmed and Khan discussed privacy protection in online communication platforms. In [13] their research showed that, users often worry about sharing personal information on open platforms. The study suggested implementing a secure authentication and controlled user access to protect user privacy. Zhang et al. explained the role of cloud-based backend systems in modern mobile applications. Their work in [14] shows that using cloud platforms reduces the need of managing physical servers and allow applications to scale easily when the number of users increases. In [15], Thomas and Joseph studied messaging systems in social networking applications. Their research showed that instant messaging helps users to communicate quickly. It also helps to build good relationships between the users. Real-time chatting also increases user engagement and interaction. Singh and Mehra analysed the security challenges in online social platforms. Their study in [16] showed that fake accounts and lack of verification are the major problems in existing platforms. Because of these issues, users feel hesitated to interact freely with strangers. Work by Garcia et al. in [17], studied the impact of digital networking platforms on community building. Their research shows that online platforms help people to connect with others who have the share similar interests and goals. These platforms allow users to share their thoughts, knowledge, and support each other.

As in [1] FemNet also uses authentication to ensure only verified users can access the platform. [2] and [3] supports the use of Firebase to store user profiles and messaging data securely and Firebase cloud services in FemNet to ensure secure data storage. As in [4] FemNet is also developed using Flutter, which helps in creating a smooth and user-friendly interface. FemNet addresses the problem mentioned in [5] by allowing only verified female users to register and access the system. Security concepts mentioned in [6] are applied in FemNet to maintain user privacy and security. FemNet follows a similar concept in [7] by allowing only female users to access the platform and real-time database to provide messaging functionality between the users. Idea of paper [8] is directly related to FemNet, where Aadhaar-based verification logic is used to allow only genuine female users to access the platform. In FemNet, Firebase Cloud Firestore and Cloud Storage are used to store user profiles, messages, and images safely. Uses Firebase real-time database and messaging services to provide instant communication between users from [9] and [10]. Paper [11] supports the idea behind the FemNet, which aims to build a safe community space specifically for women. In FemNet, Flutter is used to design a simple and clean interface so that the users can easily create profiles, send messages, and interact with others as a Lopez word in [12]. FemNet addresses issue in [13] by allowing only verified female users and maintaining a secure data storage by using Firebase services. The concept in [14] supports the use of Firebase in FemNet, as it provides a cloud-based backend with authentication, storage, and real-time database features. FemNet uses a similar concept as in [15] by providing real-time messaging between users through Firebase services. Study of paper [16] highlights the importance of identity verification, which is implemented in FemNet through dummy Aadhaar-based verification logic. FemNet follows the same concept from [17] but focuses specifically on creating a safe networking environment for women.

## III. PROBLEM STATEMENT

Now a days all of us are using the different social media applications to connect with others, to share idea, build relationships and so on, irrespective of the age and gender. However, all of the existing platforms are open for all. There might be a privacy concern of fake accounts and lack of proper identity verification, so most of the introverted women does not feel those platform safe to connect with others due to some intentional unwanted behavior and bullying. So, many of the introverted women's step back from those platforms. Even though they have a great passion in something they do not have that guts to do that alone so they need a companion who share a similar interest but at the same time they need a safer platform which is exclusively for women where they can connect and grow according to their passion and interest without any hesitation or a second thought in their mind. Therefore, the FemNet application is designed to solve these problems by creating a trusted and safer environment exclusively for the women.

## IV. METHODOLOGY

The working of FemNet application starts with user registration through email and OTP. This registration

data stores securely in the Firebase Authentication. It facilitates to check whether the user is authenticated or not in the future while logging in into the same account.

Once the verification of the user is done, they can update their profile details by adding their username, bio, profession, interests, location, etc. Here among all these, interest selection plays a major role. Because the suggestions of the users were based on the interest that they have selected during registration, and they also have the provision to edit the interest that they have selected at any time. But based on that, the platform will suggest the like-minded users to connect and communicate with each other. And it will also provide a messaging feature to enhance the communication between the users. Those messages are stored securely in the cloud storage and updated instantly without any refresh or reloading the page. All these happens only because of the services provided by the Firebase.

This application was designed using the Flutter for the frontend development to provide the simple, responsive and user-friendly user interface to the users. And for the backend we used the Firebase as it provides many useful services like Authentication, storage, messaging and etc. both these two technologies together made the platform more efficient, scalable, and secure for the users.

Overall, the methodology of the FemNet application mainly focused on 3 main aspects: secure user verification, controlled access, and Good Communication through messaging. So, all these 3 aspects together made the platform safe, trustworthy, and secure for the women who want to create a good connection with the like-minded peoples and build networking, which is most probably not present in existing platforms.

## V. PROPOSED SYSTEM

The proposed system FemNet is designed as a secure mobile based networking and community application to find the like-minded peoples who share the similar interest and can communicate and grow together according to their passion. Since it is mainly focused on the female community, it involves identity verification during the registration process to allow only the verified female individuals to the platform by restricting the duplicate accounts, so it facilitates to provide the most safe and trustworthy application to those introverted women. This reduces the privacy and security issue, fake account and bullying problems that everyone faces in the existing social media platforms. Therefore, the proposed system provides the safer and trustworthy platform for all the women.

As mentioned above, identity-based verification is the major feature in this application, which use controlled Aadhaar dataset to verify whether the registering users is male or female. And based on that they will only allow the verified women to access into the platform. And also, this helps to reduce the common problem of fake accounts what we have facing in the existing platforms, because it does not allow duplicate accounts, it allow only one account per one Aadhaar number. So, with that we can ensure the safety of the user along with the security of the platform.

Other than this, the system also provides other basic features like registration, login, profile setup where the user can enter the necessary details of them, interest selection, based on which the suggestions were shown in future to connect and build the like-minded community of the peoples within the application. Other than these, it also provides the messaging feature to connect and communicate through messages which makes the connection much stronger.

Overall, the proposed system focused on building safer and trustworthy networking and community application to allow women to connect safely with each other. This platform mainly for the introverted women with great passion and have a will to grow according to their passion. Through this platform they can connect and communicate freely without any hesitation, and it support others also to boost their confidence. This makes the FemNet application different from the other already existing networking and social media applications.

## VI.SYSTEM EVALUATION

The FemNet application is evaluated by testing the application in different conditions to check whether all the features of the application work correctly. As expected, all the modules such as registration, Adhaar verification, profile creatin, messaging, etc works correctly while testing those modules individually and also in the complete system.

During the testing process, registration module works correctly. It validates the user by OTP verification. Aadhar verification ensures only the authenticated female users are allowed to access the platform, while other users are restricted. It also prevents duplicate registrations to prevent fake accounts.

The profile module was tested to confirm all the details that the user filled like name, bio, occupation, interest, etc were all stored and retrieved correctly. The interest-based suggestion feature was helped the users to find similar profiles easily.

The Messaging module showed good performance, where the massages are received and delivered instantly without any delay. The application handles the real-time updates like messages delivery very smoothly and did not show any lag or crashes during the normal usage or during the testing.

So overall the system evaluation shows that all modules of FemNet works correctly and are well integrated. The application provides a stable and a user-friendly experience.

## VII. RESULTS

The result of FemNet application shows that the system works perfectly as expected. All the main modules of the applications like registration, login, interest selection, profile creation, messaging and etc will be implemented and tested properly. All the modules work correctly as expected and works smoothly.

The registration and identity verification module works correctly as expected. In Fig-1 users are able to register through email and OTP. Then followed by the identity verification as shown in Fig-2. This module helps in authentication process by allowing only the verified female users to the platform by restricting the duplicate accounts. So that this process helps to build trusted environment among the users, to reduce the problem of fake accounts and the privacy and security issues.

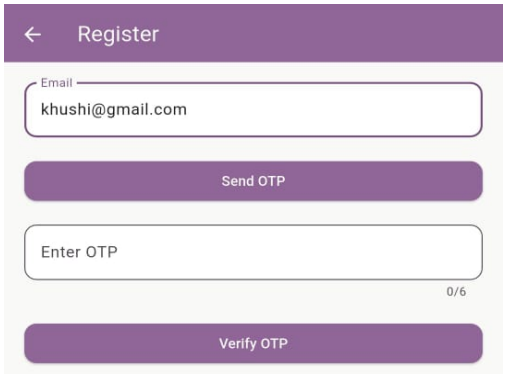


*Fig 1: Registration page*

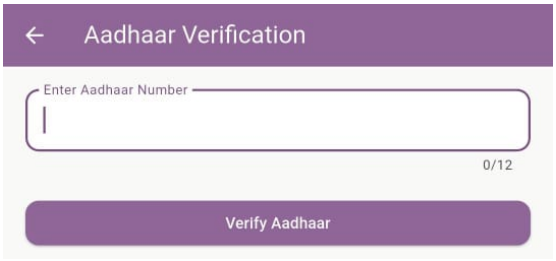


*Fig 2: Identity Verification page*

The profile creation module in Fig-3 also worked as expected. Verified users are able to enter their details like name, phone number, bio, profession, location, profile picture, etc. All these data were stored properly in Firebase, and users are able to update their profile details at any time without any difficulty. This helps in building a clear identity within a platform.

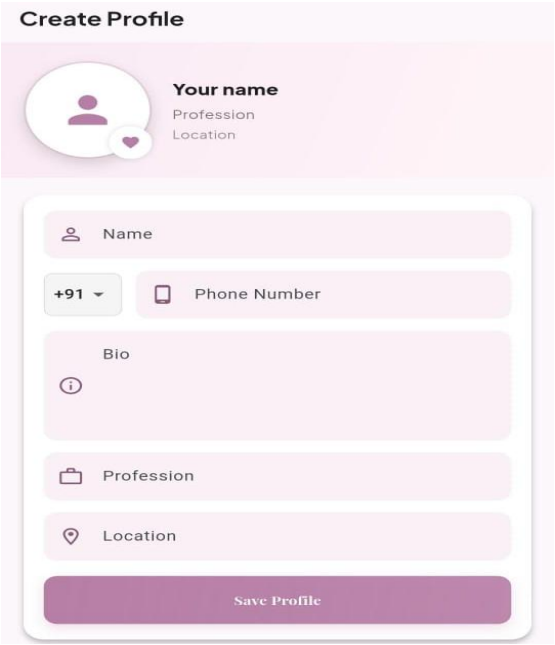


*Fig 3: Profile Creation page*

The user search and connection feature help the users to find other user profiles easily as shown in Fig-4. Based on the stored users profile data, the application displays the available users, making it simple to identify and connect with the other users. This improves interaction and community building within the application.

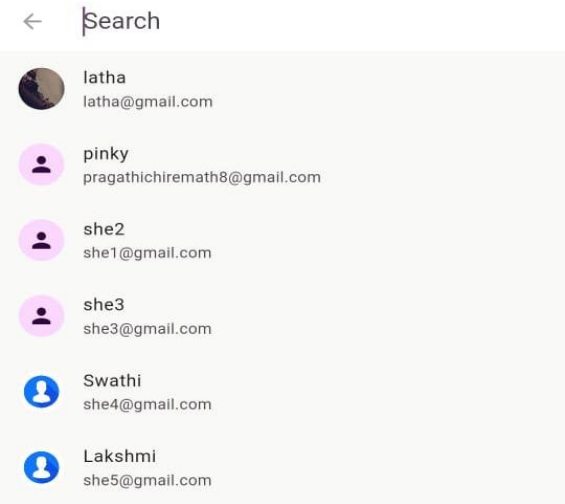


*Fig 4: User search interface*

The application also performed well as expected in terms of usability and responsiveness. It worked smoothly on different devices without any lag or crashes during normal usage. So overall the result shows that the system meets its objective and it provides a safe and effective networking platform for women.

## VIII. CONCLUSION

The FemNet application is developed with the aim of creating a safe and secure networking platform exclusively for the women. The system properly addresses the problems found in the existing social media platforms, such as fake accounts, privacy concern, etc.

By implementing identity-based verification and controlled access, the application ensures that only verified female users can enter into the platform. This helps in building the trust among the users and provides a comfortable and secure digital environment for the users to interact freely. The features like profile creation, interest-based connection, and real time messaging make the application useful for communication and community building.

The use of current technologies like Flutter and Firebase helps in developing an efficient and responsive system. The application performed well during testing and showed stable performance during usage without any major issues.

Overall FemNet provide a secure user-friendly platform for women to connect with other like-minded women. This application can be further improved by adding some other advance features in further, but the current developed system meets all its main objectives and works perfectly.

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