

Implementation of an Aadhaar Kiosk

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Abstract - The increasing Indian population, migration from neighboring countries, and numerous variants of identity cards like ration cards and voter ID cards forced the Government of India to form 'Unique Identification Authority of India (UIDAI)'. The primary responsibility of the UIDAI is to issue Unique Identification Number (UID) or Aadhaar number to Indian residents which can be used for all the government transactions/benefits schemes like gas subsidy, Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA). Like ATVMs on railway stations for booking tickets, the journey passes, etc., the aim of this paper is to create a replica of those machines and create a one-stop solution for digitally updating existing and registering for new Aadhaar. Currently, there are no means to access the Aadhaar facilities digitally.

We plan to develop a system allowing users to access the simple Aadhaar facilities viz. Aadhaar Enrolment, updating biometrics, updating mobile number & email, linking mobile number with Aadhaar, updating address, Request Physical Card and various other Aadhaar facilities using a self-service kiosk.

Key Words: Aadhaar, kiosk, UIDAI, biometrics, enrolment, updating

1. INTRODUCTION

In a survey by Population Reference Bureau Data Sheet (World Population Data Sheet, 2013), India is currently the second most populous country in the world, with 1.277 billion people, and is projected to become the largest by 2050 with a population of 1.652 billion. However, the current system of requiring multiple identity cards for various government schemes and benefits, such as gas subsidies and MGNREGA, is becoming increasingly difficult and complicated to manage. This creates a burden for citizens who must navigate these multiple requirements. To solve this issue, the Government of India formed "Unique Identification Authority of India (UIDAI)" whose goal was to issue "Unique Identification Number (Aadhaar)" to Indian residents. [12] The target was to issue 1200 million by 2020 but this could not be completed due to various reasons, one being the lack of reach of enrolment centers.

The basic concept is to build ATVM-like kiosks. This kiosk will provide various services related to Aadhaar like new registration of Aadhaar, update of Aadhaar, linking Aadhaar to a mobile number or emails, etc. the motive behind this is to make the process easy for users which will save time of user and reduce the manpower which is used to provide different services of Aadhaar. Customer reviews can be either positive, negative, or neutral.

2. Motivation

Currently, if one wants to make changes to their Aadhaar or wants to register for a new Aadhaar they have no other option, but to physically visit the Aadhaar center, to tackle this issue MEITY (Ministry of Electronics and Information Technology) is looking for unique solutions which provide a way to access Aadhaar facilities without having people visit the Aadhaar Kendra. To avoid this complication, we were motivated towards making a system that allows for the same, so we aim to create a self-service kiosk for updating as well as registering Aadhaar.

This self-service kiosk can be set up at crowded communal places for easy access which allows the users to avail of all the Aadhaar facilities on a self-service kiosk of the likes you see at a railway station for issuing tickets.

3. Methodology

Aadhaar Kiosk is an application built for providing users with means of updating and enrolling their Aadhaar card, the system proposes a self-service kiosk to the vendor they said service. The implementation of this project required a well-defined methodology that could accommodate the specific requirements and guidelines set forth by the UIDAI (Unique Identification Authority of India), while also ensuring the security and reliability of the system.

In this section, we will detail the methodology used to implement the Aadhaar kiosk web app, including the software development process, tools and technologies used, and any frameworks or methodologies employed.

3.1 Frontend

The front end would basically deal with User Interface and User Experience. React is a Javascript framework that enables the creation of dynamic web pages more efficiently. React uses JSX (JavaScript and XML) which is HTML-in-JavaScript syntax. The syntax is very similar to normal HTML but uses Javascript to render it in runtime. It provides modularity and enables us to use various Javascript features.

React hooks are used to manage the state of variables. Hooks allow us to "hook" into React features such as state and lifecycle methods. CSS will be used to make the user interface aesthetic and intuitive. Apart from that CSS is necessary to make the website responsive so that no matter on which device the website is being viewed the end user should be able to use all the features, buttons and interaction should run smoothly.

3.2 Backend

Requirements gathering: Gather requirements for the backend system, including defining features, functionalities, and security requirements. **Architecture design:** Design the backend system architecture, including the database, web server, application server, and APIs.

Development:

Develop the backend system by writing code for the database, APIs, and application server while following coding standards. Architected a MongoDB-based database for storing user data like name, address, mobile number, email, etc. and used Twilio to send OTP to authenticate user identity during the enrolment and updating process.

Deployment:

Deploy the backend system to the production environment, including setting up the web server, application server, and database server.

Monitoring and maintenance:

Monitor the backend system to ensure proper functionality, performance, and security. Perform timely maintenance and updates as needed.

3.3 Database

The Aadhaar Kiosk web app uses MongoDB to store user details for updating and the enrolment process. We use MongoDB Atlas and store the necessary details on Mongo Cloud, creating a database with appropriate collections and fields to store user data. The backend system would then need to use MongoDB API to perform CRUD operations.

4. Hardware and Software Requirements

4.1 Hardware Requirements

Hardware requirements define the required physical computer resources for the efficient functioning of the system. Following are the hardware requirements of the Aadhaar Kiosk:

- Operating System: Windows
- Kiosk RAM: 4GB and above
- Development RAM: 8GB and above
- ROM: 10GB HDD
- Dev Processor: Intel i5 and above
- Webcam (for capturing user's photo)
- Document Scanner
- Fingerprint Scanner
- Iris Scanner

4.2 Software Requirements

Software Requirements define the software resources and the prerequisites which must be installed in the kiosk for efficient function of the system. These software requirements have to be separately installed and are not included in the

default packages. Following are the software requirements for this project:

- Language:
 - HTML
 - CSS
 - JavaScript
- Frameworks:
 - REACT
 - NodeJS
- Database:
 - MongoDB
- Services:
 - Twilio

5. Design Detail

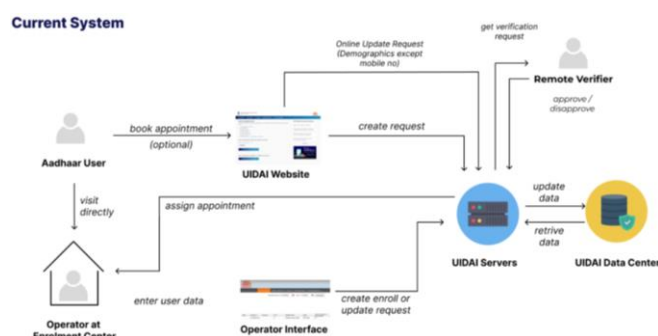


Fig -1: Current System Flow

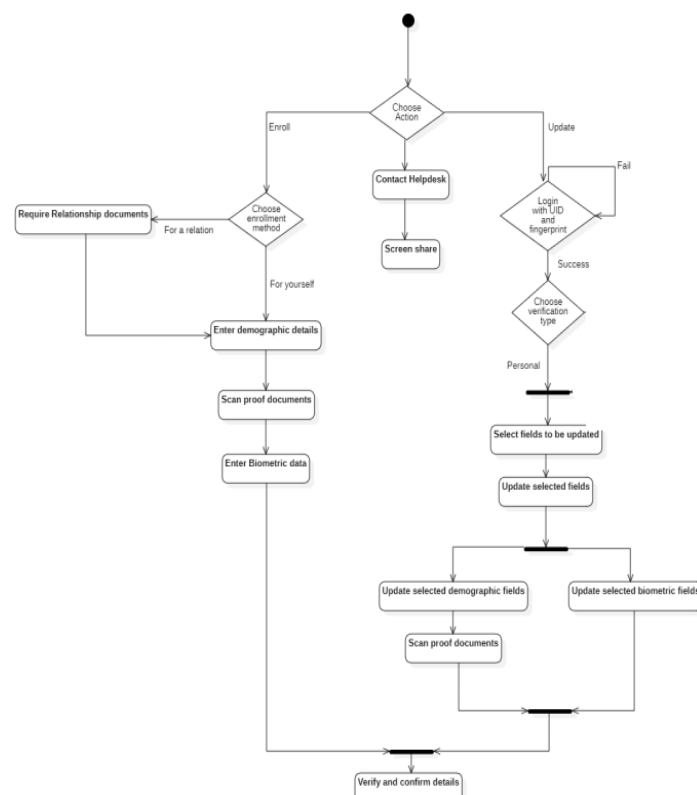


Fig -2: Context Free Diagram

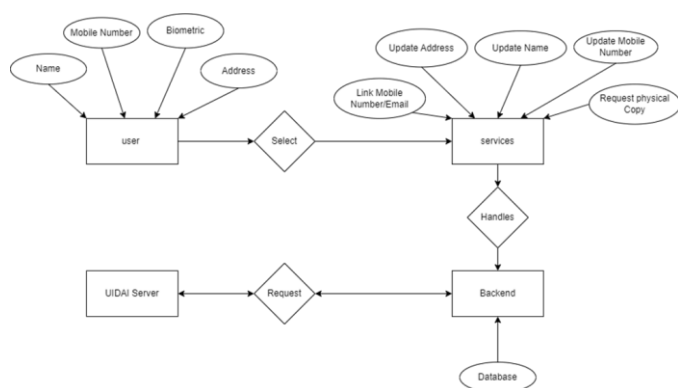


Fig -3: Entity Relationship Diagram

There is a User module, an admin module and a database module in our system. The user module will be the frontend UI presented to the user at the kiosk screen. Here he will be able to select the service he wants to avail and fill in the required information for the same.

The database module stores all the applications submitted by the users via the kiosk. The data from this database will be fed in the admin module.

In the admin module, a UIDAI representative will go through all the applications submitted. He will verify the information provided in each application and based on his verification, the application will be either accepted or rejected. If the application is rejected, the user will be notified with the reason for rejection.

6. Result Analysis



Fig -4: Home Screen of Aadhaar Kiosk



Fig -5: Page for entering Information

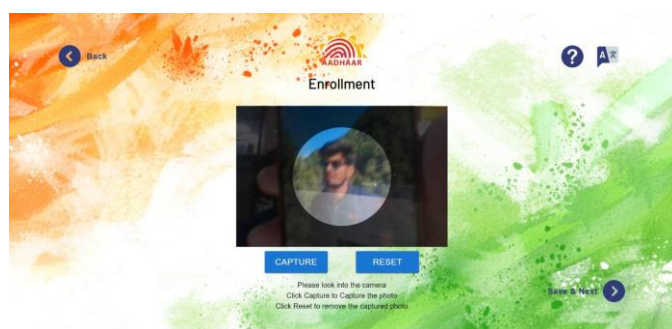


Fig -6: Facility to Capture User Photo and Documents



Fig -7: Page for Biometric scanning like iris scanning

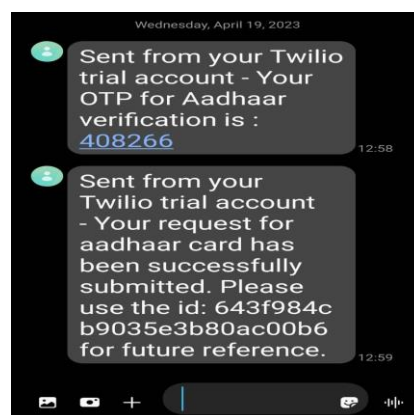


Fig -8: SMS for OTP and Successful Application Submission

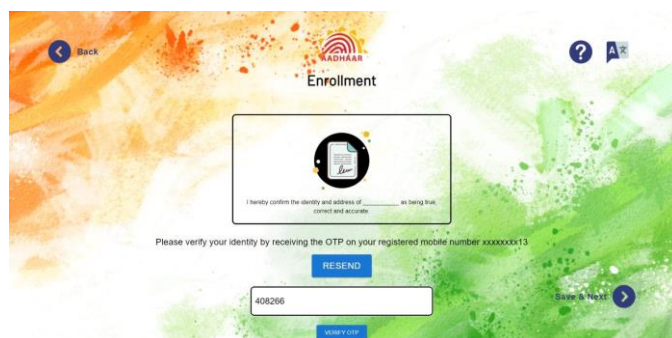


Fig -9: Page for Entering OTP

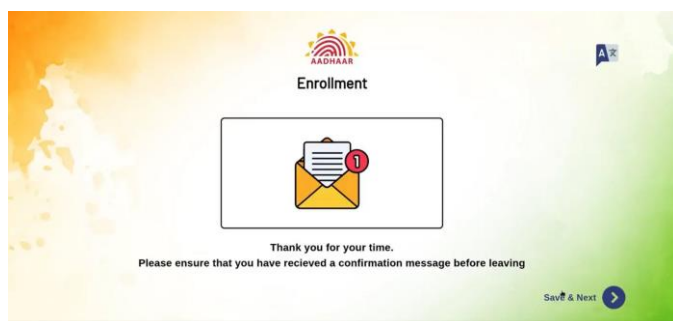


Fig -10: Exit Page for Displaying Successful Completion of Process

We developed a user-friendly website application that will be installed in the Aadhaar Kiosk. In our system, we have also provided audio functionality where the kiosk plays audio of instructions during the process. We also have added support for Hindi and Telugu language along with English and aim to add more languages which would make our Aadhaar kiosk more accessible to the citizens. This will be a great icebreaker for users who are not familiar with English.

The user has to fill in the details, submit biometrics and provide documentation for proof for creating a receipt of the registration. We were successfully able to send OTP to the registered mobile number of the user and get it verified in our system.

An Admin panel is also developed where the UIDAI representative checks the information provided by the user. Based on the submitted information, the representative can accept or reject the application and can also submit the reason for rejection. The user will get the status of the application in an SMS sent to his registered mobile number.

3. CONCLUSIONS

The Aadhaar Card has revolutionized the way in which citizens of India are identified and verified, becoming a crucial tool for accessing various government services and schemes. However, the process of enrolling for an Aadhaar Card can be a cumbersome and time-consuming affair, often involving long queues and wait times. Currently, if you want to register for Aadhaar you must physically go to the Aadhaar center and there is a token allocated to you according to which you have to sit for a time to get your Aadhaar details done.

To address this issue, our project proposes a way to create self-service kiosks for Aadhaar enrollment that can be set up in public places such as malls, railway stations, ATMs, and other high-traffic areas where anyone can enroll/update/track their Aadhaar details. These self-service kiosks will act like ATVM kiosks set up at railway stations. We are motivated to create a hassle-free experience that is available to everyone in every remote corner of this country. They need not visit Aadhaar centers to avail of this service instead what they can do is locate the nearest kiosk to them and enroll/update/track their Aadhaar details in the system.

Thus, we have developed an Aadhaar kiosk, which will provide a much more seamless experience to the citizens when compared to the current system used for availing Aadhaar services. Users do not have to book appointment, wait for weeks and stand in queues. They can go anytime to any kiosk and will be able to avail the services.

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