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# **Comprehensive Person Profiling System**

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Abstract: The proposed Comprehensive person profiling system aims to use innovative approach to revolutionizing identity verification in financial transactions, particularly within banks or other financial organizations. This project aims to replace traditional national ID usage with a more efficient and secure system. Leveraging advanced technologies such as biometrics, data analytics, and machine learning, the system ensures a comprehensive profiling of individuals, offering a robust alternative to conventional identification methods. By seamlessly integrating into financial institutions, this solution enhances inconveniences of the users' doing transactions, security, minimizes identity fraud, and streamlines customer authentication processes. The Comprehensive Person Profiling System not only safeguards sensitive information but also enhances the overall efficiency and reliability of financial transactions, marking a significant leap towards a more secure and technologically advanced future in the realm of personal identification.

Keywords: Database, Artificial Intelligence, Authentication, Image capturing, Verification

# I. INTRODUCTION

The proposed paper involves the process of collecting and interpreting facts, identifying the problem and decomposition of a system into its components. The proposed system serves as a pioneering solution aiming to replace traditional National ID Cards with an advanced biometric authentication system. Leveraging fingerprint scanning and web camera technologies, this innovative system offers heightened security and accuracy in identity verification during banking transactions.

By utilizing a fingerprint scanner and a web camera, customers can seamlessly authenticate their identities, eliminating the need for physical ID cards. This approach not only enhances convenience for users but also mitigates the risks associated with fraudulent activities, ensuring a more secure banking environment.

The system architecture comprises a robust server infrastructure dedicated to storing the extensive database of customer biometric data securely. The server acts as the backbone, facilitating real-time authentication processes across various bank branches and service points.

With the integration of this system, undergoes a trans-formative shift, streamlining customer verification processes and significantly reducing identity-related fraud. This system not only promises efficiency in banking transactions but also sets a precedent for technological advancement in national identity verification systems, aligning with the country's vision for modernization and security enhancement. This system analysis provides a comprehensive overview of the objectives, requirements, architecture, and risk associated with implementing a login module for administrators, emphasizing security, accuracy, compliance, and usability. The purpose of studying the system is to identify its objectives and improving the system to accomplish its purpose. In some sectors they manually correct details of individuals using forms which are also a challenge to those who do not know how to write, which is time-consuming and prone to human error. In this case, the organization will have access to the respective credentials by simply linking with the Application interface (API) of this system. For instance, by using a biometric fingerprint and facial scan, the system will be able to display the required details of the customers to the authorized individuals.

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## II. EXPERIMENTAL SETUP, METHODOLOGY, AND RESULTS

## 2.1 Experimental Setup

To evaluate the performance of the proposed system, a prototype was developed and tested in a real-world environment. The prototype consisted of data collection module, preprocessing, a central server, and Desktop application. For the data collection module, connecting the camera and fingerprint scanner to the system before starting capturing and the system was tested for a period of 5 months.

#### 2.2 Methodology

Methodology is defined as the branch of logic that studies reasoning. It involves studying the methods used in fields and the theories or principles behind them in order to develop an approach that matches according to the present objectives. Below is the methodology that will be used to implement the project.

*Agile methodology will be used in this project. It helps to manage a project by breaking it up into several phases.* This methodology was developed to allow flexibility which helps in the improvement of the system to be fast, easy, efficient and effective at every stage. It also allows decisions to be tested and rejected early with feedback providing benefits that are not as evident in other methodologies like waterfall. It has been chosen to adapt the changes and the scope adjustments can easily be done considering the future enhancements.



# Fig. 1. Stages of Agile methodology

Applying the Agile methodology to a person profiling system development project involves breaking down the project into smaller, prioritized components that cater to the evolving needs and preferences of users. Cross-functional teams collaborate closely, iteratively developing and refining features such as user profiles, data collection, and analytics. Continuous feedback from end-users is integral, allowing for frequent adjustments to the system's functionalities and ensuring that it aligns with the ever-changing requirements and expectations of individuals being profiled. By emphasizing adaptability, teamwork, and customer-centricity, Agile ensures the development of a person profiling system that remains responsive and relevant to its users' evolving needs and the dynamic nature of the data it processes.

#### **III. SYSTEM ARCHITECTURE**

The architectural diagram represents the physical structure of the system usage and purpose. The figure above shows how the system will analyze and identify objects based on motion and perception. The proposed system architecture integrates a server responsible for storing the database of registered users' biometric information, including biographic data, facial recognition data and fingerprints. It interfaces with a webcam and a fingerprint scanner for authentication during registry procedures. Accessible exclusively by administrators, a secure login page serves as the gateway to the system, enabling privileged access for user management, system configuration, and monitoring functionalities. The webcam captures facial images, while the fingerprint scanner records fingerprint data, both utilized in conjunction to authenticate user identities. This architecture ensures robust security measures and authentication protocols, leveraging

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multiple biometric identifiers to grant access while centralizing user data on a secure server, enhancing the overall reliability and integrity of the access control infrastructure.

# DATA FLOW DIAGRAM



## Fig. 3. Shows the User Interface of the System

The above shows the user interface which presents a secure login interface prompting the administrator to provide the required authentication inputs (face, fingerprint and biographic data), also having access to the data of the registered personnel. The login access is for restricting access to authorized administrators only.

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## Figures below shows the capturing sessions

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Fig. 4. Shows the Biographic form

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Fig. 5. Shows the facial capturing session





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Fig. 6. Shows the Fingerprint capturing session



Fig. 7. Shows Verification platform of a registered resident

# V. ACKNOWLEDGMENT

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## VI. CONCLUSION

In conclusion, the comprehensive person profiling system with a desktop application successfully completed with all deliverable, meeting the requirements. The system objectives were fully planned with all the requirements specifying the analysis which is done satisfactorily. The final outcome from the gathered data and analysis performed by the system represents the system's decision and assessment about the individual being profiled based on the information available or collected. This involves identifying characteristics, predicting behaviors, making categorization about the subject based on patterns and evidence found in the data. In summary of the system's processing and analysis, often used for making informed decisions and taking specific actions based on the profiled information.

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