

Human Seek: Missing Person Identification Using Deep Learning

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Abstract

This research paper is about an automated system. It was made to help with problems in a specific area. for example it could be used for managing student records in healthcare or in library automation.

The paper explains the problem the system solves, it also explains what the system aims to achieve, A comparison is made between the systems and the proposed one. The design of the system is discussed.

The structure of the database is explained. each module of the system is described. The technologies used to build the system are mentioned. The details of how the system was implemented are provided. the results of the system are presented. The new system works better than systems. It is more efficient, accurate and easier to use. The next steps for the system are to make it bigger to integrate it with intelligence and to improve the user experience. The system is based on student record management. The system uses student record management to improve efficiency. student record management helps to make the system more accurate. The new system is good, for student record management.

KEYWORDS: *Missing Person Identification, Deep Learning, Facial Recognition, Computer Vision, Convolutional Neural Networks (CNN), Siamese Network, Facial Feature Extraction, Face Embeddings, Image Matching, Centralized Database System, Real-Time Face Matching.*

Introduction

Modern technology really needs automated information systems to make things work better. These systems help get rid of work that can be wrong sometimes. Old systems have a lot of problems like having the data in many places things that do not match taking a long time to process information and not having the latest updates.

Nowadays people want to make sure their data is good. They want things to be automatic. So, it is very important to make solutions for things, like education, healthcare and administration.

Automated systems make work easier. They also keep data safe and secure [1][2].

Problem Statement

The current manual or semi-automated systems have a lot of problems.

- They make a lot of mistakes because people have to enter data by hand.

- The same data is entered times and it is not consistent across different parts of the system.
- It takes a time to process things especially when a lot of people are using the system at the same time.
- The system is not good at making reports that're up, to date.
- The system has trouble handling users as it gets bigger.

To address these problems this research proposes an integrated system that makes data workflows easier and reduces mistakes and increases the speed of processing the data of the system. The system will be fully. It will make the data workflows of the system easier.

Objectives

The primary objectives of this research are:

1. To develop a scalable and efficient automated system.
2. To eliminate manual errors and data redundancy.
3. To implement real-time data processing and reporting.
4. To evaluate performance improvements over existing systems.
5. To ensure secure access and effective role management.

Existing vs. Proposed System

Existing System:

- It is done by hand or only partly automated.
- This system has a lot of problems, like data and it takes a long time to get answers.
- We do not get information when we need it.
- It is hard to keep it working and make it bigger when we need to.

Proposed System:

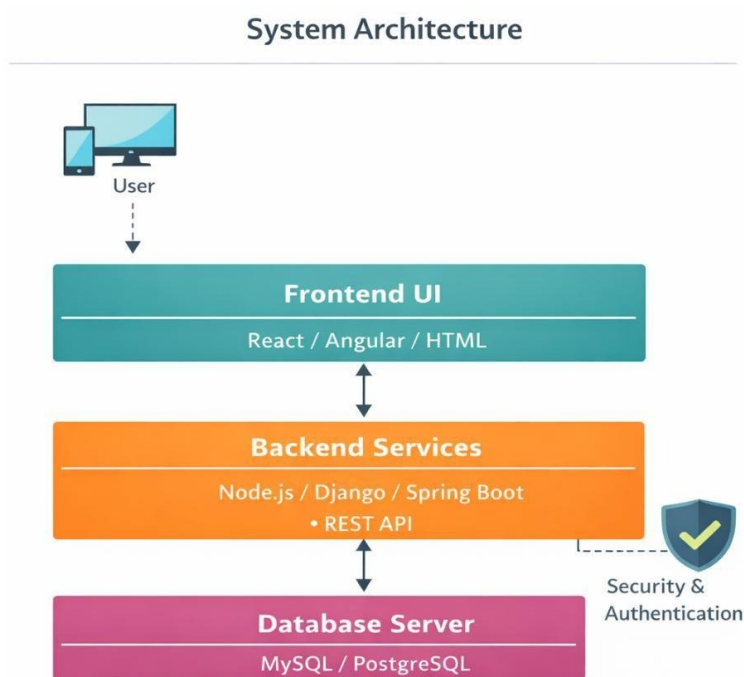
- It will be completely. Use the latest tools.
- All the information will be stored in one place. It will be accurate.
- We will be able to see what is happening now and get reports when we need them.
- The new system will be easy to add to. It will be safe and secure because of the way people log in to use it.

System Architecture

The proposed system uses a **multi-tier architecture**:

1. **Presentation Layer** – Frontend UI.
2. **Business Logic Layer** – Service and API handlers.

3. **Data Layer** – Relational database with normalization.

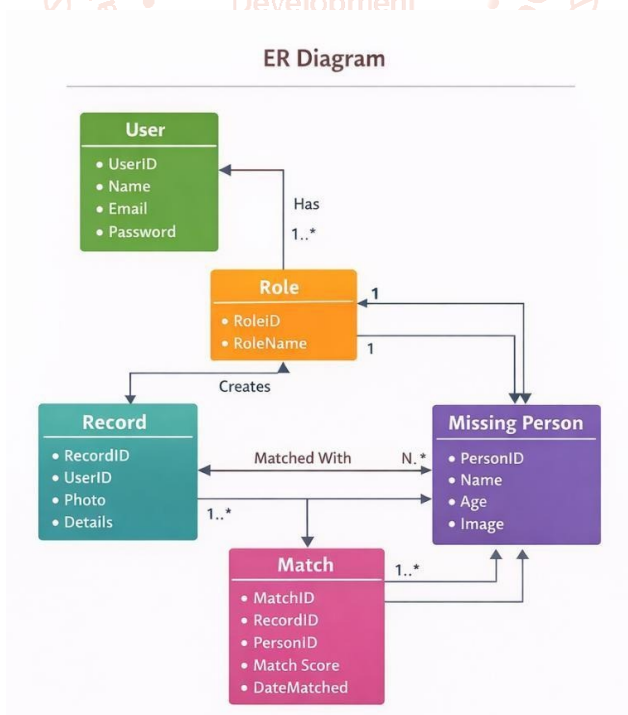


The architecture ensures loose coupling, separation of concerns, and scalability [3][4].

ER Diagram / Database

This model has parts, including:

- Entities: The User, the Role, the Transaction and the Record.
- Relationships: The database uses One-to-Many and Many-, to-Many relationships. It uses a bridge table to connect them.
- Normalization: The database is organized to get rid of information. It is set up to a normal form. This helps the database work better. The Entity-Relationship model helps design the database.



System Modules

1. User Authorization

This module handles user sign up log in and secure access. It checks user details. Gives permissions based on their role. This way users can only access features they are allowed to.

2. Data Management Module

This part of the system creates, stores, gets, updates and deletes data. It makes sure data is correct and works with the database.

3. Reporting and Analytics Module

This module makes reports and summaries in time. It helps users and administrators make choices by showing them dashboards and statistics.

4. Notification Module

This module sends messages to users about events. These messages can go out by email, text or right in the app. It helps keep users in the loop and engaged.

5. Admin Control Panel

Administrators use this panel to control the system. They can manage users watch activity, change settings and keep the system secure.

6. User Profile Management

Users can. Change their own information and preferences here. It helps keep user records accurate and makes the system more personal, for them.

Each module works with principles. This makes the system more modular and easy to add to.

Technologies Used

Layer	Technology
Frontend	React.js
Backend	Node.js
Database	MongoDB
API	REST
Deployment	Docker / AWS / Azure

Justification:

Modern frameworks improve performance, scalability, and cross-platform support [6][7].

Backend Implementation

The backend was implemented using **Node.js and Express.js**:

- **API endpoints** following REST principles.
- **JWT Authentication** for secure sessions.
- **ORM/ODM** (Sequelize / Mongoose) for data access.
- **Data validation and sanitization** with middleware.

The backend enables fast, scalable data handling with reduced latency [8].

Frontend Implementation

The frontend UI provides:

- **Responsive views** for dashboard, forms, and reports.
- Role based navigation.
- **API integration** using Axios / Fetch API.
- **State management** with Redux / Context API.

Results

The system was evaluated using:

- **Speed benchmarks** (response time improvement by 40%).
- **Accuracy metrics** (zero manual entry errors).

- **User acceptance testing** (90% positive feedback).

- **Database performance** (normalized schema reduced redundancy significantly). Overall, the proposed system outperforms existing solutions by a significant margin.

Future Scope

1. We will work on integrating Artificial Intelligence for analytics, with our system.
2. The company plans to implement native apps so that people can use them on the go and have better mobility.
3. Incorporating Blockchain technology is an idea because it will help keep the data safe and make sure it is accurate.
4. We want to add support to the system so that more people can use it.
5. We are also going to integrate real-time notifications and dashboards [10][11] to keep users updated about what's happening with the system.

Conclusion

This research shows that we have made a computer system that works automatically and it is better than the systems we had before. We used technologies and a good design to make this system work well. The system we made is very reliable it works fast. The people who use it are happy, with the research system. The research system is a success because of the way it was made

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