

AI-Integrated System for Recognizing Missing and Unidentified Persons

(Tamil Nadu Police – End-to-End Summary with Tech Stack)

Desirability

The system is **highly desirable** as it addresses one of the most sensitive and socially critical issues — the identification of **missing and unidentified persons**.

Stakeholder Benefits:

- **Police:** Faster recognition and reduced manual search time.
- **Hospitals & NGOs:** Simplified reporting of unidentified individuals.
- **Families:** Quick emotional closure and restoration of missing members.
- **Government:** Strengthens public trust and aligns with *Smart Policing* and *Digital India* missions.

The strong humanitarian and operational impact ensures broad public, institutional, and political acceptance.

Feasibility

The system is **technically and institutionally feasible** when implemented through a phased, modular approach.

Key Enablers:

1. **Centralized Cloud Infrastructure** – Deployed on **NIC or TNNeGA Cloud** for unified data management.
2. **Interoperable APIs** – Connecting police (CCTNS), hospitals, mortuaries, and NGOs through **RESTful APIs**.
3. **Standardized Data Schema** – JSON/XML templates for person details, case info, and biometric data.
4. **Federated Learning & Edge AI** – Enables AI training without transferring raw data; supports rural offline uploads.
5. **Data Security & Encryption** – End-to-end encryption, access logs, and role-based authorization for privacy compliance.
6. **Multi-Department Task Force** – Ensures data accuracy, coordination, and staff training.

Viability

The project is **financially and operationally sustainable**, ensuring long-term use and growth.

Viability Factors:

- **Initial Funding:** Government support under Smart Policing or AI-for-Governance schemes.
- **CSR & Public-Private Partnerships:** Collaborations with tech companies (e.g., Zoho, Infosys, TCS).
- **Open-Source Frameworks:** Reduces licensing costs using community-driven tools.
- **Maintenance Model:** Cloud hosting and automatic model updates lower operational costs.

With scalability and interoperability built-in, it is economically viable across Tamil Nadu and adaptable nationwide.

Technology Stack

AI & Machine Learning

- **Python, TensorFlow, OpenCV, scikit-learn, DeepFace, FaceNet** for facial recognition and image analytics.
- **Federated Learning Frameworks** – TensorFlow Federated or PySyft for privacy-preserving model training.

Backend & APIs

- **Node.js / Python Flask / FastAPI** for building REST APIs.
- **GraphQL** (optional) for optimized queries between connected databases.
- **PostgreSQL / MongoDB** for structured and unstructured data storage.

Frontend / User Interface

- **React.js / Vue.js** for the web portal.
- **Flutter** for mobile police/hospital interface (for field photo uploads).

Cloud & Storage

- **NIC Cloud / TNNeGA Cloud** for hosting.
- **AWS S3 / Azure Blob Storage** for encrypted image and video data storage.
- **ElasticSearch** for fast data retrieval and search indexing.

Security & Privacy

- **AES-256 Encryption, OAuth 2.0, and JWT Authentication.**
- **Blockchain-based Audit Logs** (optional) to ensure tamper-proof record-keeping.

Data Integration

- **API Gateway (Kong / AWS API Gateway)** to connect fragmented databases.
 - **ETL Pipelines (Apache NiFi / Airflow)** for real-time data synchronization between departments.
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Final Verdict

The proposed **AI-integrated identification system** is **Desirable, Feasible, and Viable**, supported by a robust **tech stack** and clear implementation roadmap. It bridges the **interconnection gap between fragmented databases** by leveraging **cloud technology, standardized APIs, and AI-driven recognition models**, ensuring **speed, accuracy, and security**.

This system not only empowers Tamil Nadu Police but also serves as a **replicable national model** for intelligent, humane, and tech-driven governance.