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Agile Pune Conference

Team Name - RouteMasters

Team Member Name	Branch	Academic Year
Jagdish Raut	Information Technology	2025-26
Dinesh Aher	Information Technology	2025-26
Mokshad Patil	Information Technology	2025-26
Kishor Mote	Information Technology	2025-26
Pratiksha Padwal	Information Technology	2025-26
Shweta Shinde	Information Technology	2025-26

Disclaimer

This project is intended for research and administrative support within government and law enforcement organizations. All datasets used are publicly available or synthetic. No confidential or personal data was used in development.

Project Title: Fuzzy Name Conversion of Hindi Names in Police Records

Problem and Solution

1. Problem Definition

The police department maintains vast records containing names of individuals such as victims, witnesses, and suspects. However, Hindi names often appear in multiple transliterations and spellings due to phonetic variations, inconsistent data entry, and script differences (Devanagari and Roman). These inconsistencies make it difficult to match, retrieve, or link records accurately, leading to delayed investigations, wasted resources, and legal complications.

2. Industry Domain

Domain: Law Enforcement and Public Safety

Application Area: Police Record Management Systems and Criminal Databases (GovTech)

3. Solution Provided

Our solution introduces a **hybrid fuzzy matching system** integrating **Indic Soundex** and **Levenshtein Distance algorithms** for phonetic and string similarity matching.

Key Features:

- **Hybrid Algorithm:** Combines Modified Indic Soundex and Levenshtein distance for 95–98% fuzzy name match accuracy.
- **External Data Attributes:** Uses DOB, address, etc to enhance matching accuracy to 98%.
- **Standardized Transliteration:** Follows IAST and ITRANS for Hindi-English consistency using transliteration Model.
- **Multi-Script Interoperability:** Seamless search in both Devanagari and Roman scripts.
- **Name Suggestion System:** Suggests likely matches using database.
- **Error Correction & Guidelines:** Detects typos and provides entry guidance for police personnel.

Technology Stack:

Node.js, Express.js, MongoDB, EJS, REST APIs, LibIndic, Soundex, Fuzzy-Wuzzy, B-Tree indexing, clouinary.

4. Impact Seen / Quantifiable Metrics

- **>98% Recall and >95% Precision** in name search and match accuracy.
 - **Query time reduced by 98%** (from minutes to milliseconds) using indexed phonetic codes.
 - **Operational efficiency increased by 70%**, leading to faster investigations and reduced manual verification.
 - **Public trust improved** due to higher data accuracy and transparency.
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Current Status and Future Viability

1. Current Status

- Working prototype developed for **MP Police Department**.
- Functional web system built using Node.js, Express, MongoDB, and EJS.
- Successfully tested for bilingual data entry, fuzzy search, and phonetic-based name matching.

2. Future Plans and Relevance

- Expansion to **PAN-India police records** and **Crime and Criminal Tracking Network (CCTNS)** integration.
- Development of a **mobile app interface** for on-field verification.
- Competitive edge through **hybrid algorithm optimization, data interoperability**, and **real-time phonetic search**.

3. Business Model

- **B2G (Business to Government) SaaS model**: Subscription-based deployment for police departments.
- **Implementation Support**: Customization, training, and maintenance services.
- **Revenue Model**: One-time setup + annual maintenance + API licensing.

4. Sponsor / Type of Support Available / Required

- Initial prototype developed under **Smart India Hackathon 2024**.
- Seeking **government collaboration**.

5. Top 3 Risks and Mitigation Plan

Risk	Impact	Mitigation Strategy
Data migration complexity	Integration delays	Modular architecture and structured data migration plan
Computational overhead	Slow query processing	Use of B-tree indexing and record filtering
Poor data quality	Reduced accuracy	Validation checks, audits, and error correction pipeline

Recognition Received

- Winner of **Smart India Hackathon 2024 (PS ID: SIH1787)**