Submission of Proposal for

Maha Hackathon Challenge 1.0

Transforming E-Governance with AI-enabled Smart Document Verification and Multilingual Assistant Tool for Faster Public Service Delivery

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Problem Statement 1: Use of AI in Governance
Sub Theme 5: Automated document verification

Government-issued documents serve as official proof of identity, qualification, and eligibility for various benefits and legal purposes. These certificates ensure that individuals can access essential services and rights, such as:

- Identity Verification - Birth certificates, Aadhaar cards, passports.
- Legal Recognition - Property documents, marriage certificates, business registrations
- Social Welfare & Benefits - Caste certificates, income certificates, ration cards for government schemes
- Educational & Employment Eligibility - Degree certificates, employment records, and experience letters.

The government provides official documents to ensure legal compliance, facilitate social welfare & Governance, prevent fraud, and standardize Verification & Trust.

The document verification and management process remains time-consuming, inefficient, and vulnerable to fraud. In Maharashtra, many applications for caste certificates, property registrations, and land records require manual validation, leading to delays, errors, and limited accessibility. AI can transform this process by automating verification, reducing fraudulent activities, and providing multilingual support for citizens. Citizens digitally register their applications for document verification on the government's official website (Aaple Sarkar). Government officials must cross-check applicant details across multiple databases, which is inefficient and increases the chances of fraud, which is also time-consuming. This can be solved with automation and the application of intelligent techniques.

To solve these challenges, we propose an AI-powered document verification and management system that automatically checks applicant eligibility based on government policies, predefined criteria, and multiple databases. Utilizes Optical Character Recognition (OCR) & Natural Language Processing (NLP) for document digitization and validation. The tool also contains an intelligent chatbot for users to interact and understand the document, comments, observations, and reasons for missing documents. The tool has the potential to respond to user queries in a multilingual format. This AI-enabled solution aims to reduce manual workload, enhance verification accuracy, prevent fraud, and ensure faster document approvals by improving governance efficiency and citizen satisfaction.

Objectives

- AI-driven document verification using multilingual OCR & NLP helps extract, validate, and cross-check data with existing government databases.
- Track document validity and notify users about upcoming expiration dates.
- Provide a Marathi voice-based chatbot for easy user interaction and assistance.
- Enhance accessibility, transparency, and efficiency in document verification by reducing manual workload and delays.
- Enable chatbot-based interaction to help users understand rejections, missing documents, or incomplete criteria and assist in resubmission.

- Implement AI-powered urgency ranking and prioritization, ensuring critical applications receive faster processing.
- Fraud detection using deep learning to flag anomalies in caste certificates and land records.
- AI-powered policy compliance checker to ensure documents meet government rules and regulatory standards for legal validation.

Proposed Solution

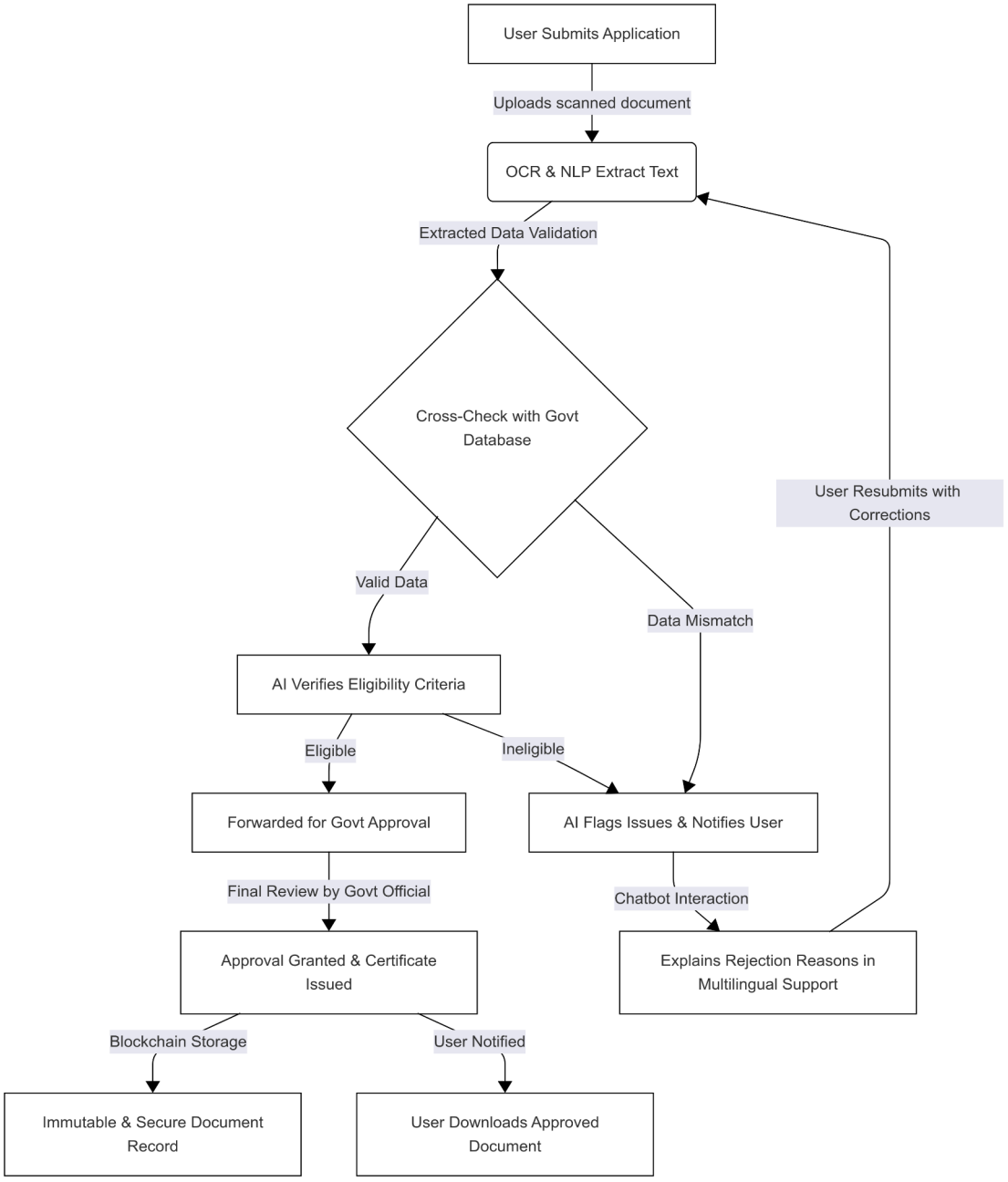

Fig 1 Workflow of the proposed AI tool

Fig 1 shows the proposed flow of an AI-powered document verification system that streamlines and enhances governance by automating the validation of government-issued

documents such as caste certificates, land records, and property registrations. The process begins with users submitting scanned documents, which are then processed using Optical Character Recognition (OCR) and Natural Language Processing (NLP) to extract and digitize the text. To ensure authenticity, the extracted data is cross-verified with official government databases (e.g., Aaple Sarkar, MahaBhoomi, MahaDBT). If the data is valid, AI evaluates eligibility criteria and forwards the application for final government approval. Upon verification of the document and the application, the document associated is issued and stored securely in a system (blockchain can be included to ensure that the data is secured and stored in a decentralized network, ensuring tamper-proof records). Users receive real-time notifications and can download their approved certificates. If a data mismatch occurs, the system flags inconsistencies and notifies the user through a multilingual AI chatbot, which explains the reasons for rejection and suggests corrective actions. Users can then make the necessary updates and resubmit their application for reevaluation. This AI-driven solution significantly reduces processing time, enhances fraud detection, improves accessibility, and ensures transparency, eventually modernizing governance by making document verification faster, more secure, and citizen-friendly.

Key Features of the Proposed System

The document management system will contain some of the below-mentioned key features to ensure that the document management process is seamlessly handled with faster processing:

- The tool integrates with various government databases (e.g., Aaple Sarkar, MahaBhoomi, MahaDBT) to retrieve, cross-check, and validate applicant details.
- Compares document details (e.g., Caste Certificate, Birth Certificate, Death Certificate) with official records to verify authenticity and eligibility.
- Capable of processing extensive government-related documentation such as rental agreements, land records, and legal contracts without performance bottlenecks.
- Chatbot will interact with the document and the intelligent platform that analyses the document to follow the set of policies and guidelines.
- Chatbot interacts with users to analyze and interpret documents based on predefined policies and legal guidelines.
- AI-based fraud detection using deep learning to identify forged or tampered documents.
- Facial recognition & biometric validation for authentication in caste certificate and property registrations.
- Predictive analytics to flag discrepancies and streamline decision-making.
- Provides real-time explanations for missing or incorrect information and suggests corrective actions.
- Addresses diverse linguistic needs (Marathi, Hindi, English, and regional dialects).
- Rank, categorize, and send documents for verification to different departments based on AI-powered urgency classification.
- Converts scanned documents, handwritten text, and multilingual content into structured digital data for seamless processing.

Use Cases

Sample use cases of the proposed solution:

Use case 1	A resident of Maharashtra applies for a caste certificate to avail of government reservation benefits for education and employment. In traditional systems, the process involves manual verification and takes several weeks to approve due to cross-checking different records. **Challenges:** ● Manual processing delays cause applicants to wait for weeks. ● Fraudulent caste certificates affect rightful beneficiaries. ● Difficulty in tracking application status, leading to repeated visits to government offices. **AI-Powered Solution:** ● The applicant submits his application online via the portal. ● AI-based OCR & NLP extract and validate data from the uploaded documents. ● The system cross-checks records with government databases (birth certificates, land records, school certificates). ● AI detects inconsistencies (mismatched parental details or missing proof). ● If errors exist, the chatbot explains the reason for the rejection in Marathi and suggests corrections. ● The user can update his documents and resubmit his application. ● AI automatically prioritizes his application upon verification and forwards it for final approval. **Outcome & Benefits:** ● Reduced the processing time with higher efficiency. ● Eliminates fraudulent caste certificate issuance using AI-based validation. ● Improved accessibility with a multilingual chatbot for application tracking.
Use case 2	A farmer applies for a property title verification to secure an agricultural loan. Fraudulent practices, such as duplicate land ownership claims, often lead to delayed approvals and financial loss. **Challenges:** ● Land records manipulation leads to fraudulent ownership claims. ● Slow manual verification impacts loan approvals and land transactions. ● Multiple document dependencies make verification complex. **AI-Powered Solution:** ● The user submits her land ownership documents via the portal. ● AI extracts survey numbers, ownership details, and transaction history from government databases. ● The system cross-verifies property details with tax records, previous sale deeds, and legal disputes. ● AI detects mismatched land boundaries in the documents and flags a potential fraudulent claim. ● The system alerts the revenue department for manual review and notifies Sunita via chatbot. ● If verified as legitimate, the system automatically generates a digital verification certificate. **Outcome & Benefits:** ● Fraud detection in real-time, reducing illegal land transactions.

	• Expedited land title verification, allowing farmers to secure loans faster. • Enhanced transparency & security in Maharashtra's land registry system.

These use cases describe how the users benefit from applying AI-powered solutions to handle and process their requests from the government.

Impact and Benefits

For Government

- Automates document verification, minimizing human intervention and accelerating approvals.
- Detects forged, tampered, or duplicate documents using deep learning and AI-driven fraud detection mechanisms.
- Provides tamper-proof digital records, ensuring data integrity and compliance.
- Ensures documents adhere to legal frameworks & eligibility criteria, reducing errors & misapprovals.
- Uses urgency-based ranking to ensure that time-sensitive applications (e.g., legal or medical documents) get processed first.
- Automating verification minimizes operational costs for government departments by reducing paperwork, manual reviews, and redundant processes.
- It can be integrated into existing Maharashtra government portals (MahaBhoomi, MahaDBT, Aaple Sarkar).

For Citizens

- AI automation reduces waiting time from weeks to days.
- Citizens can apply, track, and resolve issues in their preferred language (Marathi, Hindi, English, regional dialects).
- AI-driven fraud detection prevents identity theft, document forgery, and land ownership fraud, ensuring only genuine applications get processed.
- AI-powered notifications provide live updates on application status, reducing the need for repeated follow-ups or physical visits.
- Voice-based chatbot assistance enables digitally underserved communities to interact with the system without needing literacy skills.
- Ensures faster, secure, and unbiased processing of government services, increasing citizen confidence in public administration.

Future Scope

1. Mobile applications for real-time document verification & cloud integration for handling high-volume requests.

2. Expand by supporting more official government documents like PAN cards, Voter ID Cards, Driving Licenses, or other documents.
3. It can include more services like loan applications, pension approvals, and taxation.
4. Potential for adding Blockchain for ensuring tamper-proof document storage.

The proposed AI-powered document verification system aims to revolutionize governance efficiency, fraud prevention, and citizen accessibility by leveraging Artificial Intelligence (AI), OCR, NLP, and Blockchain. By automating document verification, reducing manual workload, and ensuring multilingual support, this system addresses the challenges of delays, fraud, and accessibility gaps in Maharashtra government public administration. With real-time document validation, AI-driven fraud detection, and chatbot-based assistance, the system enhances transparency, accuracy, and policy compliance across various government services, including caste certificates, land records, property registrations, and social welfare documentation. Integrating predictive analytics and urgency-based prioritization further optimizes service delivery, ensuring critical applications receive faster processing.

The future scalability of this system allows for cloud-based deployment, mobile integration, and expansion to financial services such as taxation, loan approvals, and pensions. The potential blockchain implementation ensures tamper-proof verification, preventing document forgery and reinforcing public trust in governance. With the help of the proposed AI-driven solution, the Maharashtra government can significantly improve administrative efficiency, reduce fraudulent activities, and enhance citizen experience. This initiative represents a major step towards digital transformation in governance, ensuring that public services are faster, fairer, and more accessible to all citizens, regardless of language or literacy levels.