

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

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. The tool also assists the stakeholders in understanding the documentation and the process in their regional language with the help of an interactive agentic environment.

The list of APIs required for building the system

1. Optical Character Recognition (OCR) API
2. Automatic Speech Recognition (ASR) API / Transliteration API
3. Text-to-Speech (TTS) API
4. Interactive Text Normalization API
5. Name Entity Recognition (NER) API
6. Gender Classification API

1. Optical Character Recognition (OCR) API

OCR helps automatically extract the text from scanned images or PDF documents, which helps in a machine-readable format. Since Maharashtra is a multilingual state, some of the physical documents will be written in Marathi, Hindi, and English. Hence, there is a requirement for certain modern OCRs that support multilingual text extraction. It helps in converting unstructured scanned text into structured digital format. It helps in the processing of applications by cross-checking data automatically. It helps find the discrepancies (if any error exists, it flags the document for manual review). With the help of OCR, we can reduce the processing time because manual checking or verification of documents is time-consuming. Hence, We can use OCR API, which helps extract the text and checks with the database whether that person is eligible for that specific certificate. This also helps government officials since each department will have many documents, leading to delays.

2. Automatic Speech Recognition (ASR) API / Transliteration API

Automatic Speech Recognition is an AI technology that helps convert spoken language into text. It helps automate voice-based interaction, thus helping illiterate people search for the reason for their ineligibility or rejection of their certificates. This feature can also be helpful to elderly people. Also, if it supports multilingual voice interactions, it allows the citizens to know why government officers didn't approve their certificates. This helps in getting the information very fast. Thus helps in reducing the manual searching through the document.

3. Text-to-Speech (TTS) API

Text-to-speech (TTS) is an AI technology that converts written text into natural-sounding speech. It helps the users to hear the written information instead of reading it. It also helps illiterate people to know about the status of their certificates, the reasons why they got rejected, and the subsequent queries related to that. It also helps elderly people and others who have some eye problems. It provides real-time audio updates on application status. Integrating Marathi, Hindi and other local languages of Maharashtra helps the common people to know about their certificate.

4. Interactive Text Normalization API

Interactive text normalization is a technique that helps in converting unstructured text into a standard format that AI systems can easily process. Since the government certificates can be handwritten, text normalization ensures the AI is processing accurately by standardizing the text input, making it cleaner and more consistent. It helps reduce the errors in voice-based enquiries, supports multilingual, helps in reducing the processing delay due to incorrect format, it also helps in converting the mixed text into a single language so that the AI can understand the queries of the user.

5. Name Entity Recognition (NER) API

Name Entity Recognition (NER) is an NLP tool that automatically extracts entities like names, dates, addresses, and ID numbers from documents. Thus the extracted entity can be cross-verified with the government databases. This can also help in identifying fraudulent claims.

6. Gender Classification API

It helps in predicting the user's gender based on name or images. It helps ensure the gender-based eligibility criteria for some certificates or schemes (widow pension) and helps in detecting fraud in gender-based reservations or applications.

Conclusion

“Transforming E-Governance with AI-enabled Smart Document Verification and Multilingual Assistant Tool for Faster Public Service Delivery” is a project that helps government officers verify the documents submitted by the applicant very easily and smoothly. It helps the officers reduce the time for cross-checking the details with the database (handwritten and scanned documents) with the help of interactive text normalization API, Name Entity Recognition API, and Optical Character Recognition. Classifying the applicant based on gender with the help of Gender Classification API helps them to understand whether the applicant is eligible for certain schemes (women/girl-based schemes). The project is also integrated with a chatbot, which helps illiterate people identify the reason behind their certificate rejection and talk with the chatbot in their language with the help of Automatic Speech Recognition / Transliteration API and Text-to-Speech API.