

AI-Powered Government Form Filling Assistant

Project Contribution Details

Backend Development – Mrigangana Sarkar

- Designed and implemented the complete backend architecture using Python and Flask to support document processing and form auto-filling workflows.
- Developed the OCR processing pipeline using EasyOCR and PyMuPDF to extract text from scanned images and PDF documents.
- Integrated the Groq Large Language Model (LLM) API to perform AI-based extraction of structured entities such as name, date of birth, Aadhaar number, PAN number, gender, and address.
- Implemented robust validation and normalization logic for sensitive fields including Aadhaar, PAN, and date of birth to ensure data accuracy and reliability.
- Designed and implemented an intelligent form mapping engine using direct mapping, fuzzy matching, and field-ID matching strategies.
- Developed RESTful API endpoints for document upload, entity extraction, form listing, and intelligent auto-filling of government forms.

Frontend Development – Arpita Barik

- Designed and developed the complete frontend user interface using HTML, CSS, and JavaScript to ensure a clean and user-friendly experience.
- Implemented document upload functionality with real-time status messages indicating document processing and completion stages.
- Integrated frontend components with backend APIs to enable seamless extraction, auto-filling, and data retrieval operations.
- Developed dynamic form rendering logic that allows users to view, edit, and validate auto-filled form fields before final submission.
- Implemented functionality to download the auto-filled forms in both JSON and PDF formats using jsPDF.
- Handled end-to-end user interaction flows including document upload, form selection, editing, and file download.

Documentation & Research – Prerana Maiti

- Conducted detailed research on optical character recognition techniques and AI-based information extraction methods.
- Studied the structure and data requirements of various government forms to support accurate mapping and automation.
- Prepared comprehensive project documentation covering system architecture, data flow, entity extraction logic, and form mapping strategies.
- Documented validation rules, fallback mechanisms, and error-handling strategies used in the system.
- Assisted in preparing the project README, technical reports, and presentation materials for academic and training submissions.