**Intern Name: Shruti Tyagi**

**Email ID:** [**shrutityagi3007@gmail.com**](mailto:shrutityagi3007@gmail.com)

**1. Optical Character Recognition (OCR) for Form Scanning**

**Purpose:**

OCR will convert physical forms into digital text for processing.

**Free Resources:**

* **Tesseract OCR**: Open-source OCR engine for extracting text from scanned images. Supports multiple languages and is highly customizable.
* **Google Vision OCR**: Free tier allows a limited number of scans (up to 1000/month) for text extraction from images.
* **EasyOCR**: Another free, open-source tool with support for over 80 languages.

**Steps:**

1. **Preprocessing**: Use **OpenCV** (open-source library) to clean up scanned images (e.g., noise reduction, skew correction).
2. **Text Extraction**: Use **Tesseract OCR** or **Google Vision** for text recognition.

**2. Text Structuring and Software Format Generation**

**Purpose:**

Convert OCR-extracted text into a structured format that can be voice-filled.

**Free Resources:**

* **JSON**: Use to store structured data for easy processing.
* **Python Libraries**:
  + **Pandas**: For organizing extracted text into structured tables (e.g., fields and labels).
  + **Flask**: For creating lightweight web interfaces to render forms that can be filled by voice.

**Steps:**

1. **Data Mapping**: Organize fields into **JSON** format with labels and field types.
2. **Dynamic Form Generation**: Use **Flask** to generate a dynamic form interface that can be filled with voice input.

**3. Voice Input and Speech-to-Text Conversion**

**Purpose:**

Allow users to fill forms using voice commands.

**Free Resources:**

* **Google Speech-to-Text**: Free tier for up to 60 minutes/month for speech recognition.
* **Mozilla DeepSpeech**: Open-source speech-to-text engine that can be customized and deployed.

**Steps:**

1. **Voice Recognition**: Integrate **Google Speech-to-Text** or **Mozilla DeepSpeech** for converting voice into text.
2. **Input Handling**: Map recognized voice input to specific form fields in the structured format