

Project Goal:

To create a system that leverages OCR to extract relevant information from a customer's cheque and automatically populate the corresponding fields in an e-NACH form. This digitized e-NACH form will then be processed to facilitate subscriptions to a leading company's paid program, ensuring compliance with NPCI guidelines.

I. Core Functionality & Output:

1. Inputs:

- **e-NACH Form Image/PDF:** System needs to accept a blank or partially pre-filled e-NACH form as an image (JPEG, PNG, TIFF) or PDF.
- **Cheque Image:** System needs to accept a clear image of the customer's cheque.
- **Customer Identifier (Optional):** A unique identifier for the customer, which may be used to pre-fill certain fields on the e-NACH form or to look up additional customer information.

2. Processing and Analysis:

- **Cheque OCR:**
 - **Extraction:** Extract the following information from the cheque image using OCR:
 - Account Holder Name
 - Account Number
 - Bank Name
 - IFSC Code / MICR Code (Prioritize IFSC if available)
 - Cheque Date (Use for e-NACH Start Date if no other date is provided)
 - **Quality Check:** Implement checks to ensure the cheque image is clear, not fraudulent, and has the necessary details.
- **e-NACH Form OCR:**
 - **Template Recognition:** Automatically identify the specific e-NACH form template (if multiple exist).
 - **Data Extraction:** Extract existing data from the e-NACH form.
- **Data Mapping and Population:**
 - **Mapping Rules:** Define rules to map extracted cheque data to corresponding fields in the e-NACH form. For example:
 - Cheque Account Holder Name -> e-NACH Customer Name
 - Cheque Account Number -> e-NACH Account Number
 - Cheque Bank Name -> e-NACH Bank Name
 - Cheque IFSC Code -> e-NACH IFSC Code
 - **Auto-Population:** Automatically populate the e-NACH form fields using the extracted and mapped data.

3. Output:

- **Partially Filled e-NACH Form (Digitized):** A digitized e-NACH form with the fields populated from the cheque data. The system should output:
 - A visually clear representation of the e-NACH form, showing the populated fields.
 - The data used to populate each field (for verification).

- **Data Output (Structured):** The extracted data (both from the cheque and the e-NACH form) outputted in a structured format (JSON, XML, CSV)
 - **Data Validation Report:** Highlight any discrepancies or missing data.
 - **Confidence Scores:** Include confidence scores for the accuracy of the extracted data from both the cheque and the e-NACH form.
 - **Form Status:** Whether the form is ready for submission, or requires manual review
4. **Integration:**
- **API Integration:** Expose an API for easy integration into the subscription system.
 - **Endpoints:** Should support:
 - Upload cheque and e-NACH form
 - Return the populated e-NACH form, structured data, and validation report.
 - **Subscription System Integration:** Integrate into the subscription system so,
 - Populated e-NACH automatically used to setup subscription.

II. Technical Requirements:

1. **Robust OCR Engine:** Should utilize a robust OCR engine to extract accurate data from cheques and e-NACH forms.
2. **Scalability:** Ability to handle a high volume of e-NACH and Cheque form submissions.
3. **Accuracy:** High degree of accuracy to minimize manual intervention.
4. **Security:** Must ensure secure handling of customer financial data.
5. **Flexibility:** Adaptable to different Cheque and e-NACH form formats.

III. User Interface (If Applicable):

1. **Review/Edit Screen:** Enable personnel to manually review the extracted information, make any needed corrections, and confirm the accuracy of the completed form.

IV. NPCI Compliance:

1. Compliance with all relevant NPCI guidelines for e-NACH processing.
2. Secure storage and handling of sensitive customer data.

V. Success Metrics:

1. Accuracy of OCR extraction and data population.
2. Reduction in manual effort for e-NACH form completion.
3. Faster subscription processing times.

Example Workflow:

1. Customer provides a cheque and a blank (or partially completed) e-NACH form.
2. Images of the cheque and e-NACH form are uploaded to the system.
3. The system extracts relevant information from the cheque image using OCR.
4. The system extracts data from the e-NACH form
5. The system maps the extracted data to corresponding fields in the e-NACH form and automatically populates those fields.

6. The system generates a digitized e-NACH form with populated fields and a validation report.
7. If the system detects any discrepancies or missing data, the form is routed to a human operator for review and correction.
8. Once the form is verified, the system submits the e-NACH request for processing.

By incorporating cheque information into the e-NACH digitization process, this project aims to significantly streamline the subscription process, reduce manual data entry, and improve overall efficiency while adhering to strict security and compliance standards.

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