OPTIPARSE

POOL-KSHATRIYAS

INTRODUCTION:

OBJECTIVES:-

>>> **Boost Efficiency:** Make managing your finances more efficient and accessible to everyone.

>>> **Seamless Integration:** Ensure smooth integration with current systems for processing data.

>>> **Better User Experience:** Improve the user experience with easy-to-use interfaces and helpful features.

What is OCR ?

Optical Character Recognition (OCR) is a technology designed to convert images of text into machine-encoded text.

This process involves analyzing the visual representation of text and identifying patterns to extract characters, which can then be processed as digital text.

EXPERIMENTATIONS

EasyOCR

- Average Confidence Score: 0.7929
- Accuracy: 80%
- Strength : Capable of identifying text in multiple languages.

Tesseract OCR

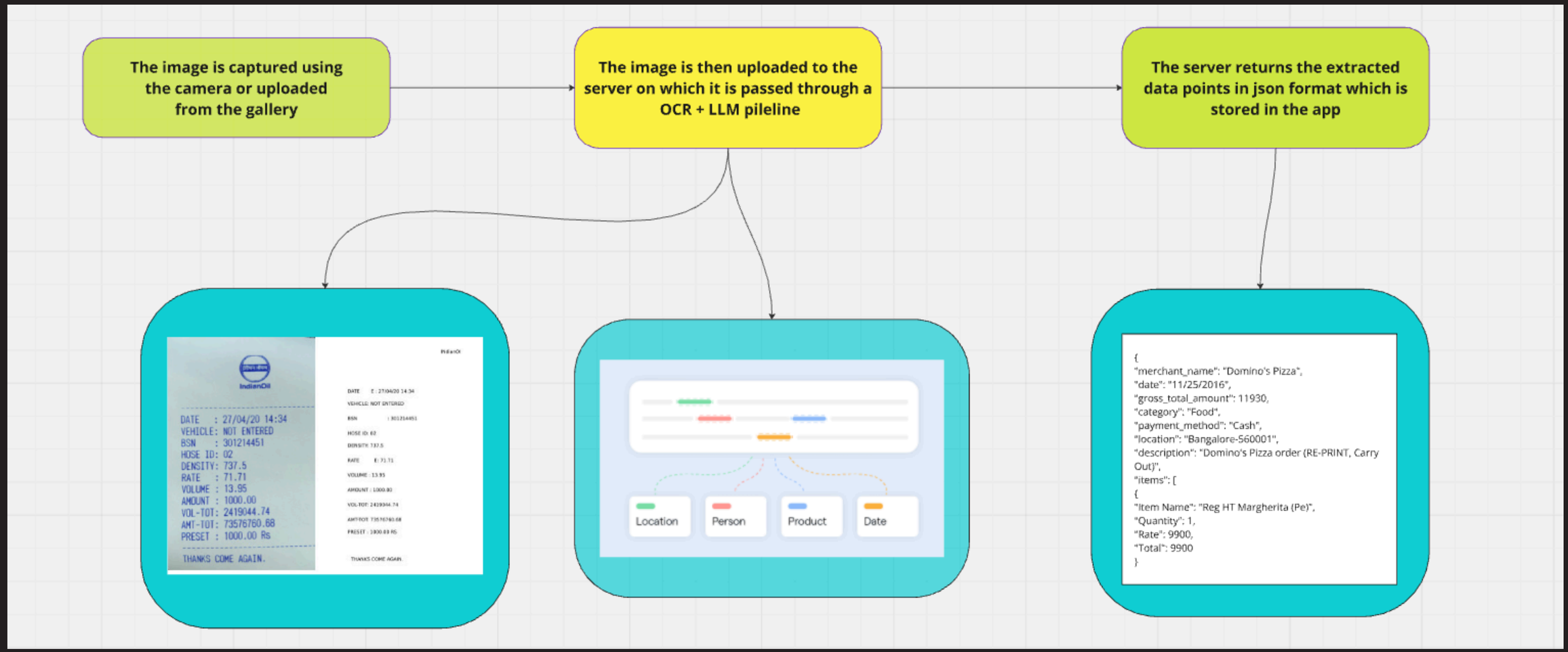
- Average Confidence Score: 0.7431
- Accuracy: 80%
- Strength : Efficient processing time with a high accuracy rate.

Paddle OCR

- For Standard Images : Accuracy: 97.5%
- For Handwritten Images : Accuracy: Variable; includes missed words, disordered lines, and some spelling errors.
- Strength : High accuracy with standard images and robust text extraction capabilities.

ARCHITECTURE

VISUAL ARCHITECTURE:



CHALLENGES IN OCR:

>>> Text Quality and Clarity : OCR struggles with images that are blurry, low-resolution, or poorly lit. The text needs to be clear and well-defined for accurate recognition.

>>> Different Fonts and Handwriting: OCR systems can struggle to read text if it’s in unusual fonts, different sizes, or written by hand.

>>> Special Characters: Uncommon symbols or special characters can pose difficulties for accurate recognition.

>>> Large Documents: Scanning and processing large documents or high volumes of documents can be time-consuming and resource-intensive.

CHALLENGES IN LLM:

>>> Bias and Fairness : LLMs can pick up and repeat biases from their training data.

>>> Misinformation and Hallucination : LLMs might generate text that sounds convincing but is actually incorrect or they might keep on repeating the same information even specifically asked to stop .

>>> Context Understanding : LLMs might struggle with understanding and keeping track of context in complex conversations.

CHALLENGES IN GPU:

>>> Hardware Limitations : GPUs have a limit to how much they can process and how much memory they have.

>>> Cost : High-performance GPUs can be very expensive.

>>> Software Compatibility : Not all software is designed to use GPUs effectively.

>>> Security Concerns : GPUs can be vulnerable to security threats.

DATA-BASING & APP UIUX:

>>> **Data-basing :** Our app extracts data from receipts and stores it in JSON format, including both the textual details and the corresponding images. This structured approach ensures efficient management and retrieval, facilitating easy access to comprehensive transaction records for further processing and analysis.

OTHER APPROACHES WE TRIED

Deep Learning-Based OCR : Uses advanced AI techniques, like Convolutional Neural Networks (CNNs) and Recurrent Neural Networks (RNNs), to read and understand text.

Transfer Learning : Takes models that have been trained on similar tasks and tweaks them for specific OCR needs.

VLMs : A Vision-Language Model (VLM) is an artificial intelligence system designed to understand and generate both visual and textual information .

Adaptive OCR : OCR systems that learn and improve over time as they process different types of documents.

USE CASE:

>>> Document Digitization : You can scan old books and important records to keep them safe and easy to search. For example, digitizing old manuscripts in libraries so researchers can access them without damaging the originals.

>>> Text Recognition in Images : Useful for translating signs, menus, or labels when traveling. For instance, using an app to scan and translate a restaurant menu while abroad.

>>> Content Extraction for Search Engines : Makes the content of scanned documents searchable online by extracting and indexing the text, improving how information is found on the internet.

THANK YOU !