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Business Domain
Construction

Project Type
AI Workflow Automation

AI-Powered Invoice Matching Across Construction Workflows

Client

A leading US construction and infrastructure company delivering large-scale civil, industrial, and commercial projects. The company manages delivery paperwork and invoice reconciliation across field operations and back-office systems.

Project

The project delivered a multi-stage AI document reconciliation service that connects Procore and CMiC, interprets delivery slip images, normalizes invoice and delivery data, and links each slip to the most likely invoice even when descriptions do not match exactly. Built as an unattended background workflow, it reduced manual reconciliation work, improved processing efficiency, and supported the client's goal of automating delivery slip matching.

Objective

The business goal was to automate delivery slip to invoice matching, reduce manual effort, shorten processing time, and lower the risk of human error. The work centered on turning a repetitive, multi-step reconciliation process into a reliable background workflow.

Expertise Applied

The value came not just from automation, but from designing a robust hybrid AI matching system combining vision-based extraction, semantic reasoning, and approximate matching. Instead of treating delivery slip matching as a standard OCR workflow, the team evaluated multiple approaches, measured reliability, and selected the best fit for handling inconsistent descriptions, vendor terminology, handwriting, and noisy data. The logic was deliberately conservative to minimize incorrect matches and protect downstream accounting.

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Challenge

Before the project, delivery slips had to be handled manually. A photo of the slip was uploaded to a shared cloud location, then another employee opened the image, read the information, and searched for the related invoice in a separate ERP system.

This introduced delays, extra handoffs, and avoidable effort across teams. The task became harder when product descriptions on delivery slips did not match invoice wording exactly.

This was not just an OCR problem. The process depended on data coming from Procore and CMiC, and the matching logic had to work even when vendor terminology, item descriptions, and document quality varied. Because incorrect matches could affect accounting records and job cost reporting, the solution had to be careful, not just fast

Quick Facts

- Procore and CMiC integration
- 12-week implementation
- Hybrid AI matching across inconsistent, handwritten, and low-quality documents
- 90%+ target automation coverage

Technologies

Python / OpenAI Vision API / OpenAI Chat in JSON mode / RapidFuzz / PostgreSQL / Docker

Solution

★ 01

The solution uses a multi-stage AI workflow that pulls fresh invoices and delivery slip photos, limits the scope of matching to only new records, and reconciles documents even when the inputs do not line up cleanly

★ 02

A list of delivery slip to invoice matches is prepared and sent out via email. Low-confidence cases are marked and sent out separately for review.

★ 03

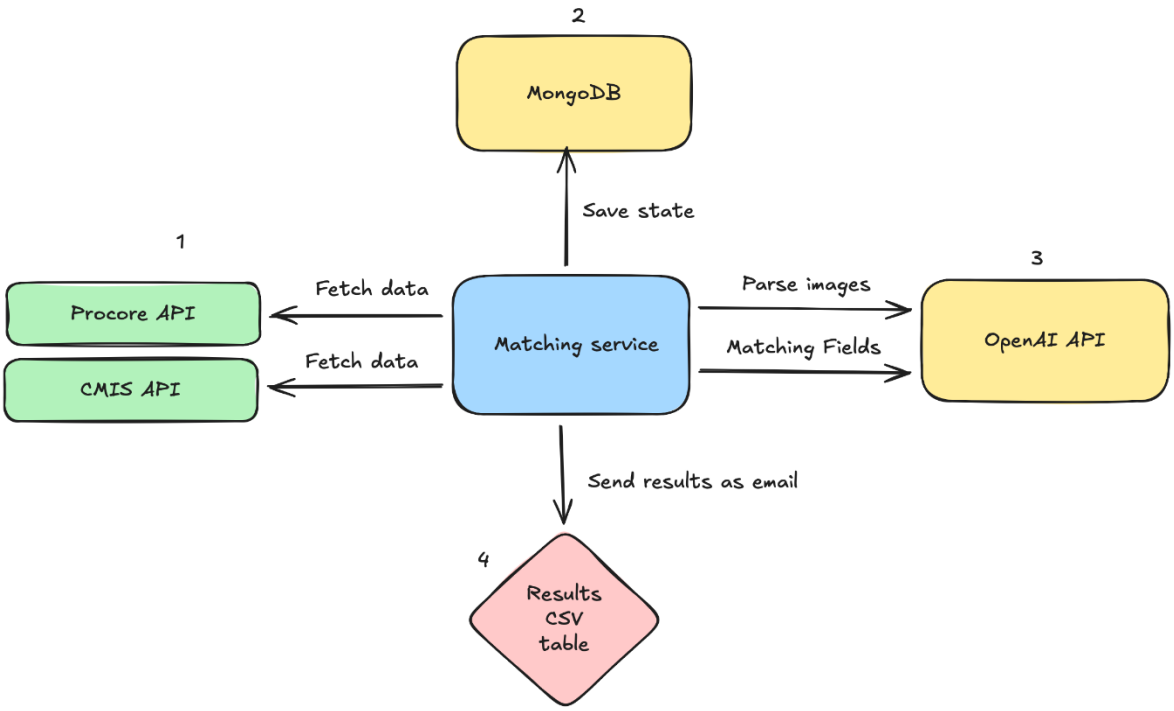
At the same time, invoice data is normalized into the same structured model, creating a consistent basis for comparison.

★ 04

Structured data from both delivery slips and invoices goes into LLM for semantic data matching.

★ 05

OCR goes through delivery slips and collects data into a structured model.



Client Reference

"The team has been working very well. I especially appreciate how production needs were anticipated early, including automatic recovery of Docker and the application after machine restarts. The team has been responsive, and the work is moving smoothly.

Technology Director

Benefits and Results

- The solution reduces manual reconciliation work, cutting the time staff spend reviewing slips, searching invoices, and handling repetitive cross-system checks.
- AI automated delivery slip to invoice matching is expected to cover at least 90% of documents with potential to increase.
- A conservative matching approach helps lower the risk of incorrect links that could affect accounting records or job cost reporting, while leaving low-confidence cases for manual review.
- Running in the background, the service integrates with Procore and CMiC, improves efficiency, and scales without disrupting field or accounting workflows.

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Techstack:

Python / OpenAI Vision API / OpenAI Chat in JSON mode / RapidFuzz / MongoDB / Docker

Team: 3

Project Manager, Backend Developer/Architect, Business Analyst