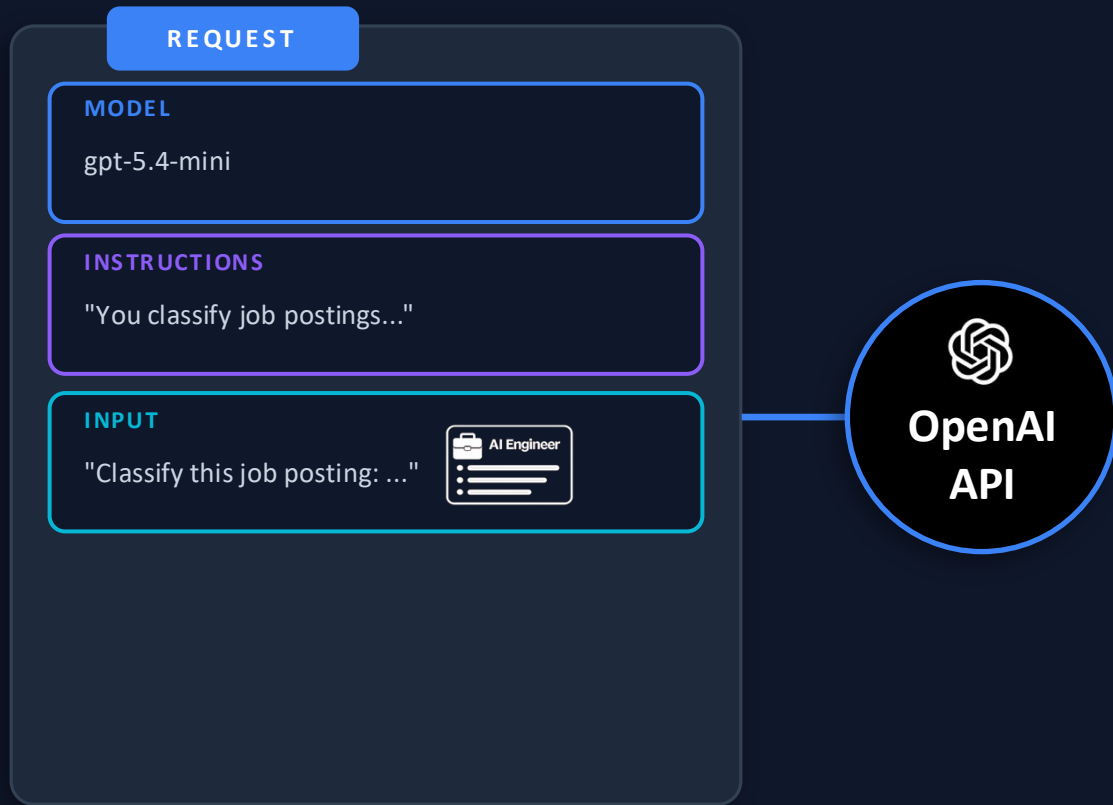


MODULE 1

What is “AI Engineering”?

Components of the Classification LLM Call



API Differences

Request – OLD Chat Completions

MESSAGES[0]

ROLE: **SYSTEM**

"You classify job postings..."

MESSAGES[1]

ROLE: **USER**

"Classify this job posting..."

Request – NEW Responses API

INSTRUCTIONS

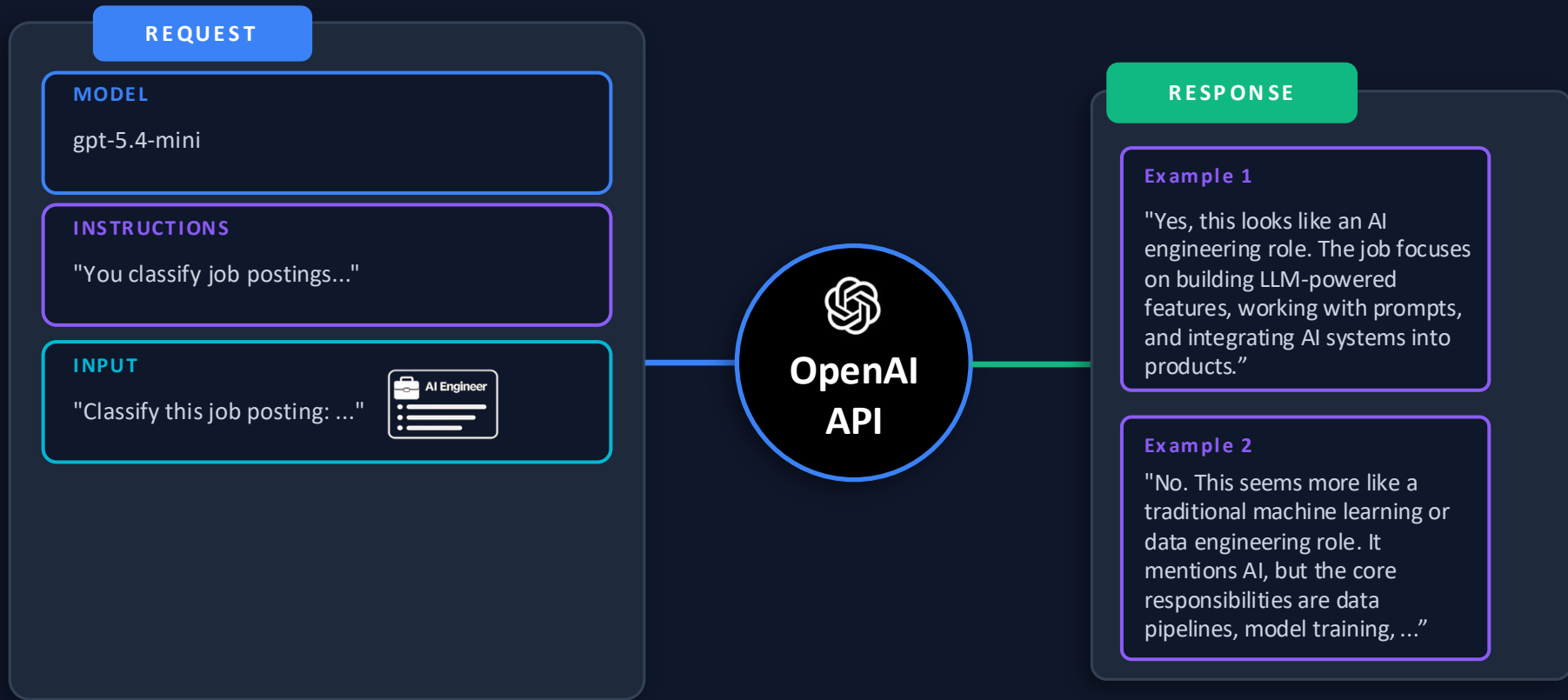
"You classify job postings..."

INPUT

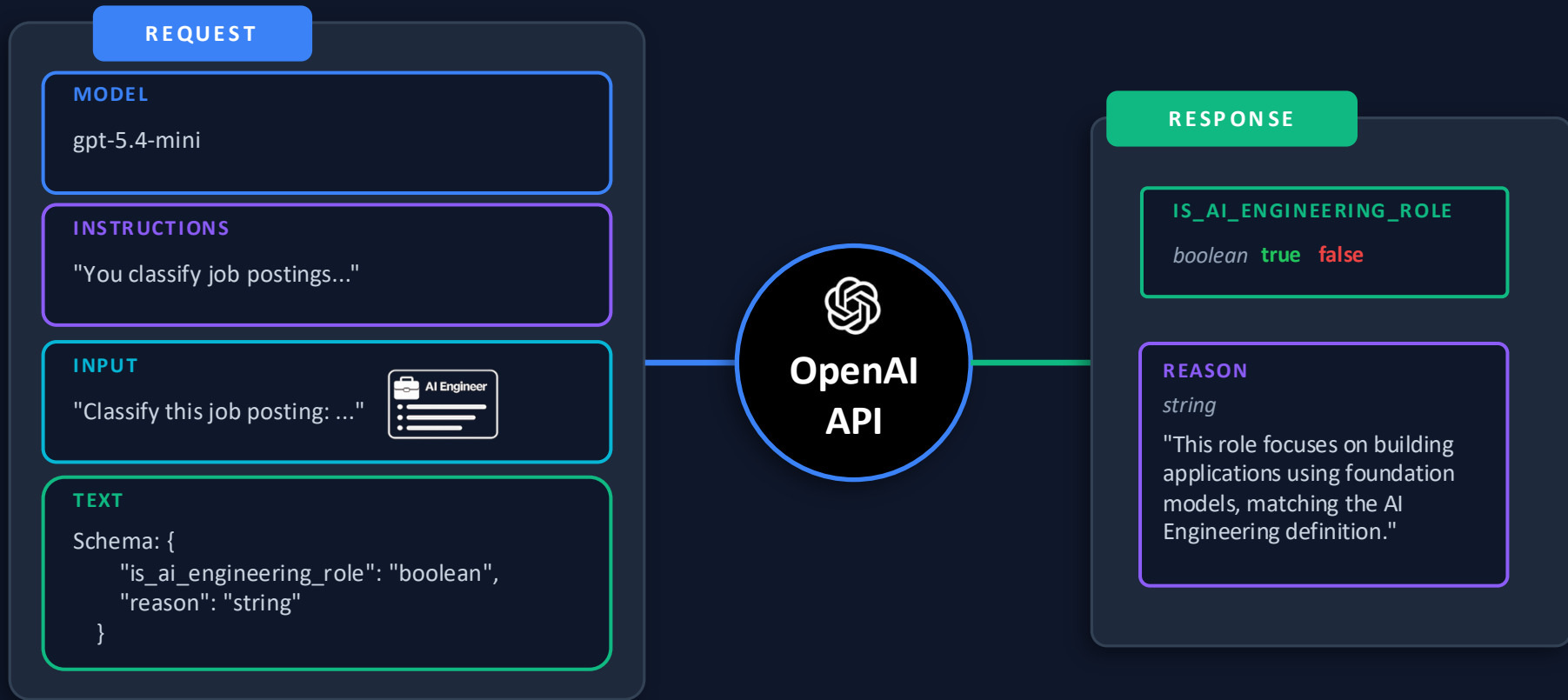
"Classify this job posting: ..."



Components of the Classification LLM Call



Components of the Classification LLM Call

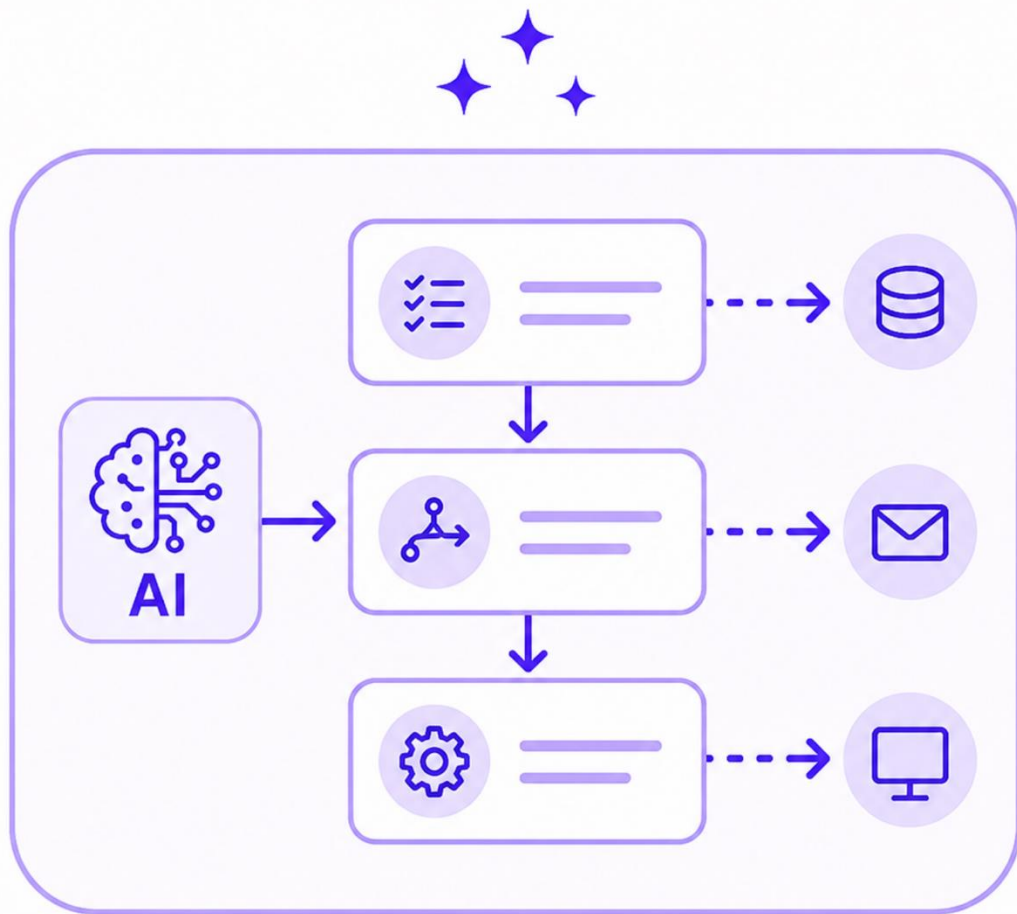


Most In-Demand Skills of AI Engineers

1	Python	83%
2	RAG	61%
3	Prompt Engineering	44%
4	AWS	44%
5	LLMs	42%
6	LangChain	34%
7	Azure	27%
8	Docker	24%
9	Machine Learning	24%
10	GCP (Google Cloud Platform)	24%
11	AI Agents	24%
12	Vector Databases	22%

1. Workflow automation and task agents

AI is being used to take over repeatable business work, route steps, and trigger actions across internal systems; for example, ServiceNow's "autonomous implementation solutions" generate ServiceNow configurations, user stories, test scripts, and deployment packages, and Dataro builds internal agents that eliminate CS, sales, and ops toil.



1. Workflow automation and task agents

Different Levels of Customer Support

1. Agent assist

The AI helps a human support agent. It reads the ticket, searches docs, summarizes history, suggests an answer or recommends the next step. The human still sends the final reply.

2. Semi-automated support agent

The AI handles simple cases by itself, but escalates unclear, sensitive, or high-value cases to a human.

3. Fully automated customer service chatbot

The AI talks directly to the customer and solves the issue end-to-end, for example:

1. Workflow automation and task agents

Sales

An AI agent could:

- Enrich leads
- Summarize calls
- Draft follow-up emails
- Update CRM fields
- Identify promising prospects

1. Workflow automation and task agents

Operations

An AI Agent could:

- Process internal requests
- Fill spreadsheets
- Monitor workflows
- Generate reports
- Coordinate tasks across tools

1. Workflow automation and task agents

Other interesting applications

Job Application Review Assistant

- Reads incoming applications
- Compares it against the requirements
- Does a web research about the candidate to e.g. find their projects
- Scores and Summarizes the candidate
- Prepares a Review for the hiring Team

1. Workflow automation and task agents

Other interesting applications

Content Moderation Pipeline

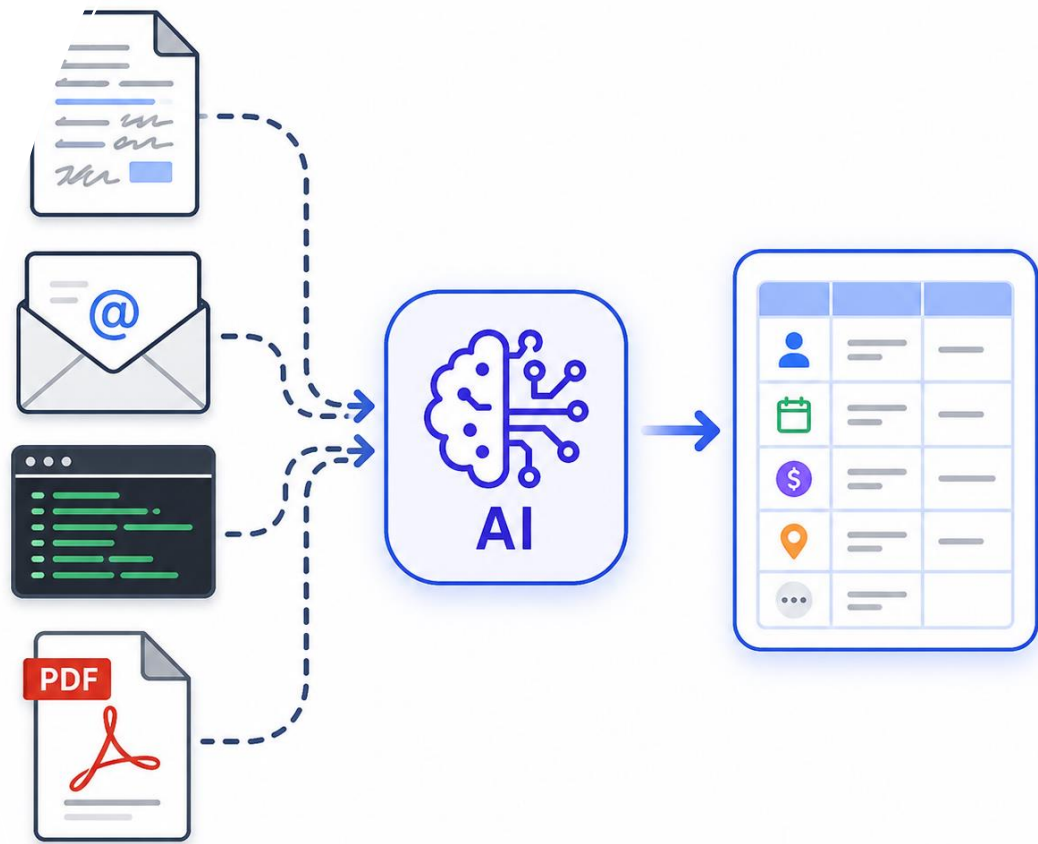
- Platform receives user-submitted posts
- AI-Agent reviews each submission
- Flags policy violations with a reason
- Auto removes clear-cut cases
- Queues the borderline ones for a human reviewer with a recommendation already attached

Why Workflow Automation Wins

Workflow automation is the **most common type of AI application** being built right now because almost every company has workflows full of **repetitive steps**, and the value of automating them shows up **immediately**.

2. Document reading, extraction, and document processing

AI is being used to pull information out of messy documents, emails, logs, and PDFs and turn it into structured data; for example, Labrynth builds regulatory document processing and pre-draft generation systems, while BAI automates document ingestion from spreadsheets, PDFs, claims files, and emails.



2. Document reading, extraction, and document processing

Other interesting applications

Job Analysis Pipeline

- Scrape Jobs
- Classify Jobs
- Extract required Skills

2. Document reading, extraction, and document processing

Other interesting applications

Invoice Processing Pipeline

- Reads incoming invoices from mails
- Extracts the vendor name, amount, and due date
- Checks it against existing purchase orders
- Flags mismatches
- automatically approves or routes the ones that look clean

2. Document Processing

Insurance

Finance

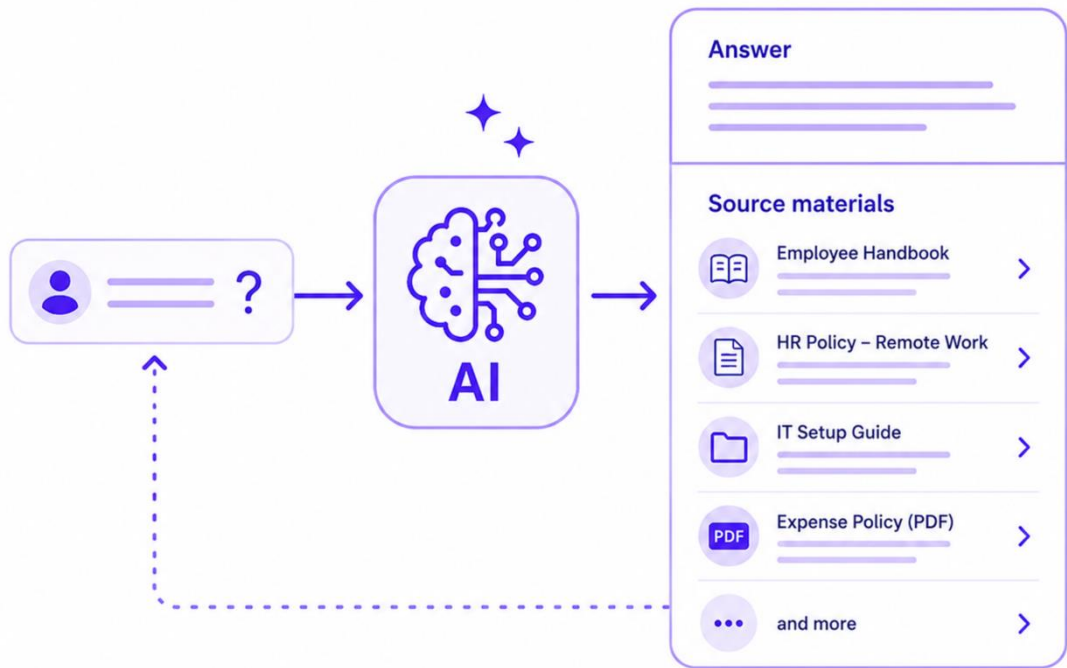
Law

Healthcare

This category is particularly common in **insurance, finance, law, and healthcare** — anywhere **documents are central** to how business gets done.

3. Search, knowledge retrieval, and question answering

AI is being used to find answers inside company knowledge and connect users to the right source material; for example, Notion uses AI to “find answers and automate work” across docs, and Duke is building semantic search and retrieval-augmented generation (RAG) over institutional data sources and document repositories.



RAG: Retrieval Augmented Generation



Foundation models have a **limited context window**, so we cannot simply put the whole knowledge base into the prompt. RAG finds the **relevant pieces** based on what the user asks and passes **only that** on to the LLM as context.

RAG is **#3** of the most in-demand skills we extracted earlier!

From 20 Minutes to Seconds

Internal knowledge bases

Customer support teams

Research-heavy workflows

20 minutes

digging through documentation



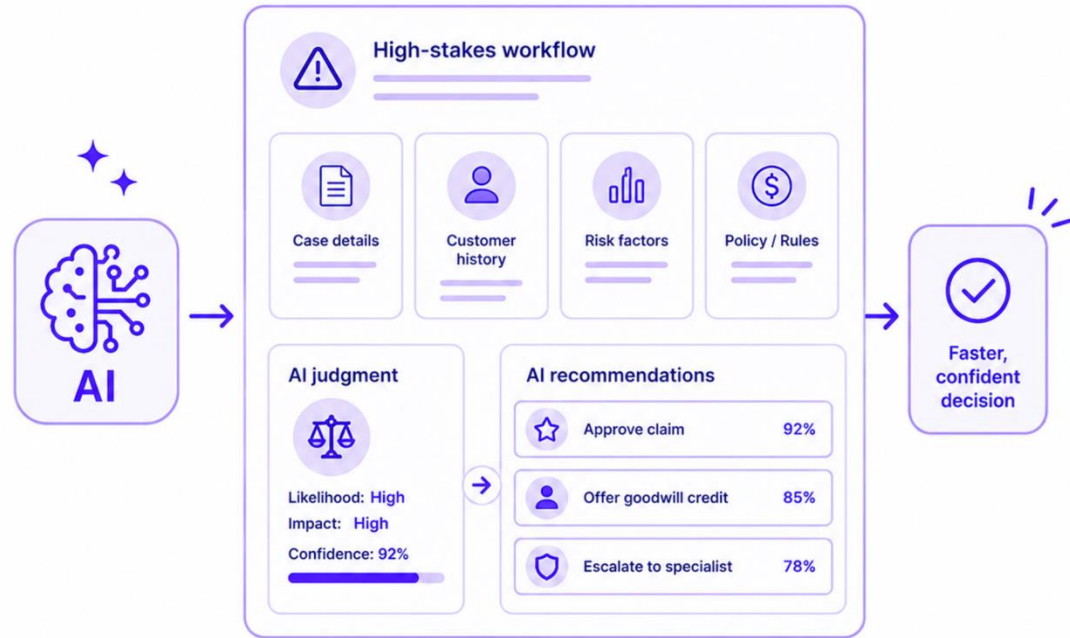
Seconds

ask a question, get an answer

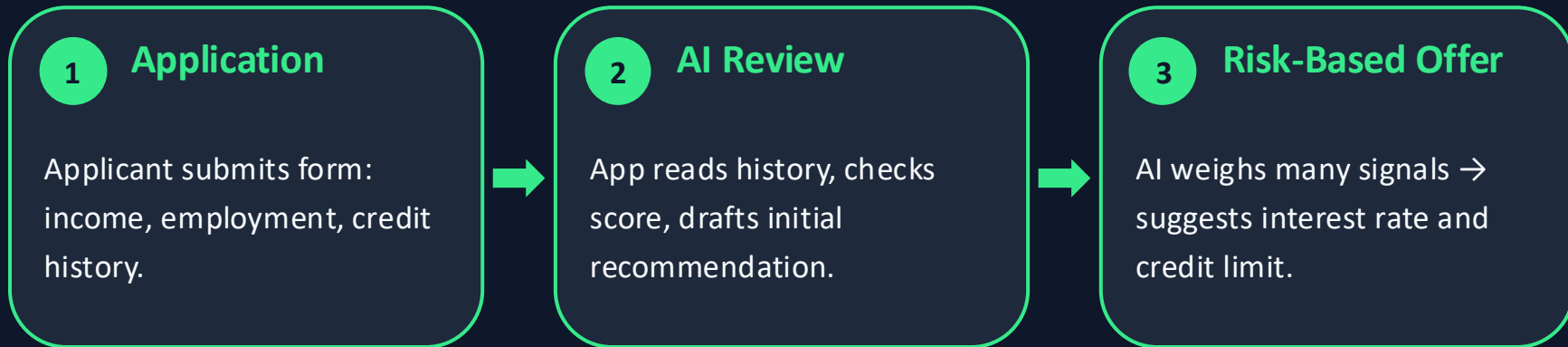
This category comes up wherever knowledge is locked away in long-form content

4. Decision support and prediction

AI is being used to make judgments, surface recommendations, and help people decide faster in high-stakes workflows; for example, Experian is building AI for credit analytics and credit decisioning across origination, underwriting, limit setting, portfolio monitoring, and model validation, and FIG is building automated decision-support tools for advisors.



Experian: Credit Decisions



Where Decision Support Fits

Frequent

made over and over

Data-heavy

lots of inputs to weigh

Expensive to get wrong

errors carry real cost

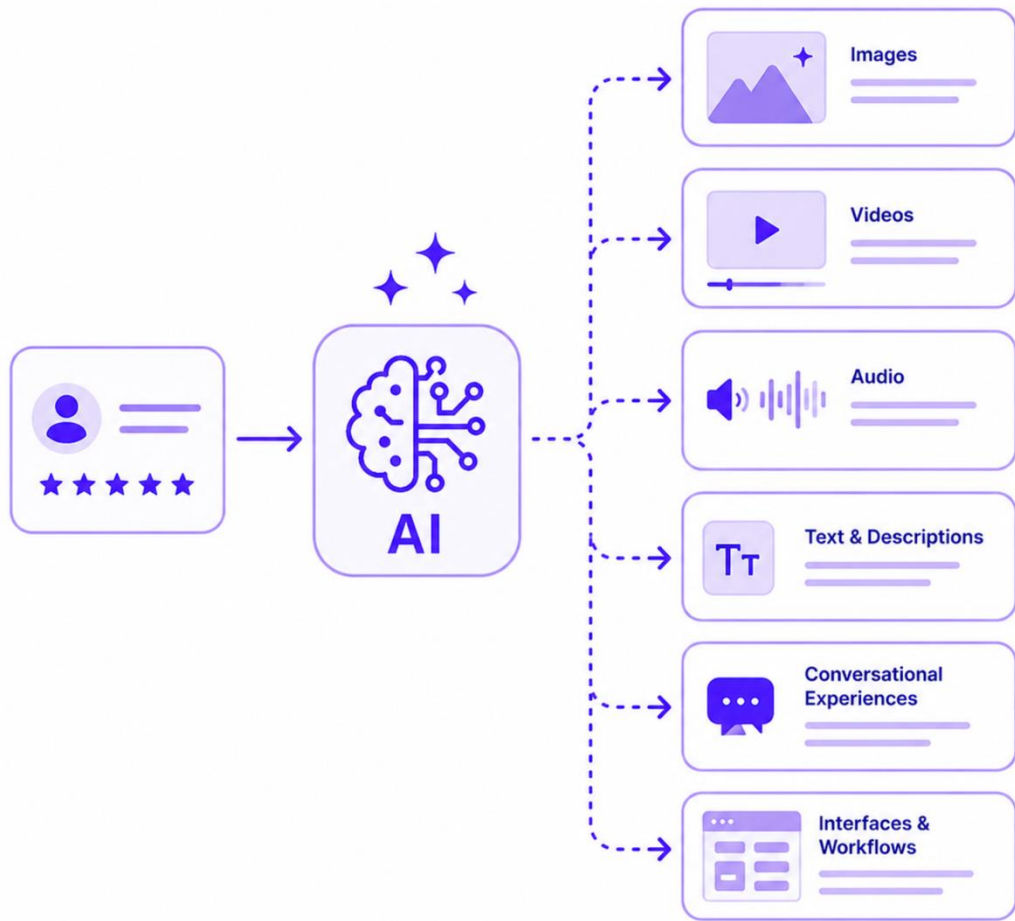
Finance

Insurance

Healthcare

5. Content, interface, and customer-facing generation

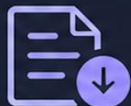
AI is being used to create or improve user-facing outputs like creative assets, text, interfaces, and conversational experiences; for example, Amazon Advertising's Creative X team builds AI-driven creative generation for audio, images, videos, and descriptions, and AWS's Venue and Arena tools help builders rapidly prototype interfaces and design workflows.



Top 5 AI App Categories



1. Workflow Automation



2. Document Processing



3. Knowledge Retrieval



4. Decision Support



5. Content Generation