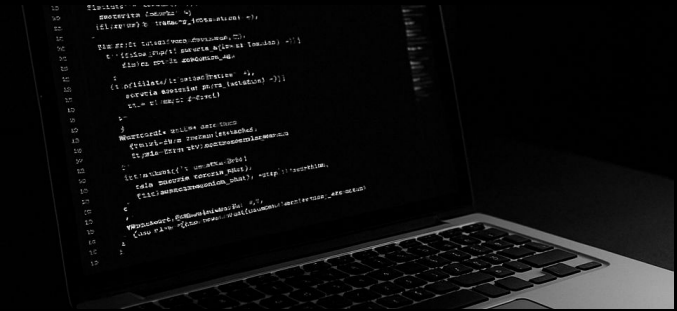


Agentic RAG



By combining **intelligent document processing** with **reasoning-driven query handling** and **specialized agent coordination**, this architecture dramatically improves response accuracy, reduces hallucinations, and enables complex problem-solving capabilities previously unattainable in retrieval systems.

- **Improves response accuracy** through iterative retrieval refinement
- **Reduces hallucinations** by grounding in verified knowledge
- **Handles complex queries** through strategic decomposition
- Provides transparent, explainable information sourcing
- Adapts to dynamic information needs through agent reasoning



Benefits of RAG

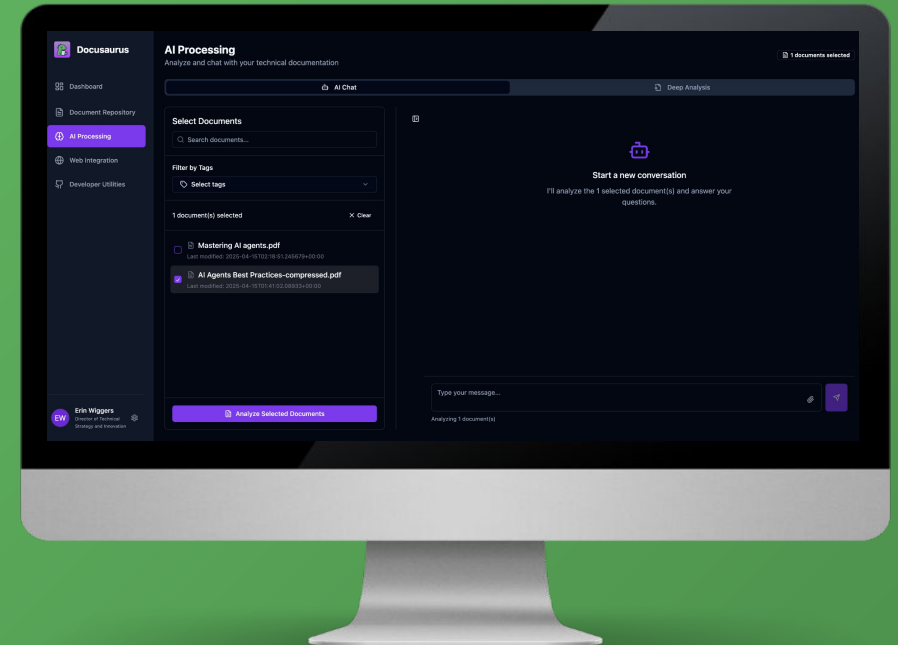
Retrieval-Augmented Generation with Agents

AI Agents



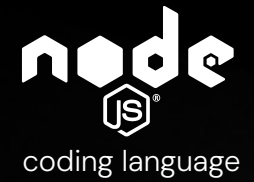
Docusaurus

a smart document repository that allows for agentic chat with optimally processed uploads through an intuitive interface





Backend



n8n

has some really great built-in functionality for agents like coordinating memory, chaining summaries, and enforcing response schemas

Tools Used

Frontend



React
JS framework

 tailwindcss
CSS framework



React

easiest framework by far to spin up something from existing components and skin them with different themes and styles

Tools Used



AI



Windsurf

my favorite for agentic pair programming because
I can easily switch between models for certain
tasks, monitor the agent, and review code

Tools Used

n8n

Main Workflows



01. Upload Processor

transforms raw content
into retrievable knowledge



02. Query Handler

transforms user questions into
contextually relevant answers

Smart Chunking

UPLOAD PROCESSOR

Features

- Intelligently processes documents preserving hierarchical structure
- Identifies document hierarchy through heading analysis
- Uses section-based chunking to maintain document structure
- Employs fallback strategies when no structure is detected
- Controls chunk size for optimal LLM compatibility

NOTE: n8n has some built-in functionality for this, but it does not allow for hierarchy or section-based chunking



Smart Chunking

This robust library processes and chunks documents intelligently, preserving their hierarchical structure for optimal retrieval in RAG systems. The library handles various file formats, extracts text, analyzes document structure, and creates semantically meaningful chunks with rich metadata.

Core Features

Document Processing

File Type Detection: Automatically identifies file types (PDF, Office documents, plain text)

Text Extraction: Extracts text from different document formats

Error Handling: Implements comprehensive error recovery and fallbacks

Hierarchical Chunking

Structure Analysis: Identifies document hierarchy by analyzing headings

Section-Based Chunking: Preserves document structure by chunking based on sections

Smart Fallback: Employs intelligent fallback strategies when no structure is detected

Token Management: Controls chunk size based on token count for LLM compatibility

Metadata Enrichment

Structural Metadata: Tracks hierarchical relationships and paths

Content Analysis: Extracts topics, entities, and assesses complexity

Relational Data: Establishes relationships between chunks (parent-child, preceding-following)

Advanced Features

Document Structure Preservation: Maintains the hierarchical structure of documents

Semantic Sectioning: Creates chunks based on semantic boundaries rather than arbitrary splits

Fallback Mechanisms: Ensures chunking works even with unstructured documents

Rich Metadata: Enriches chunks with context, structure, and relationships

Token-Aware Processing: Optimizes chunk sizes for LLM compatibility

Advanced

Metadata Creation

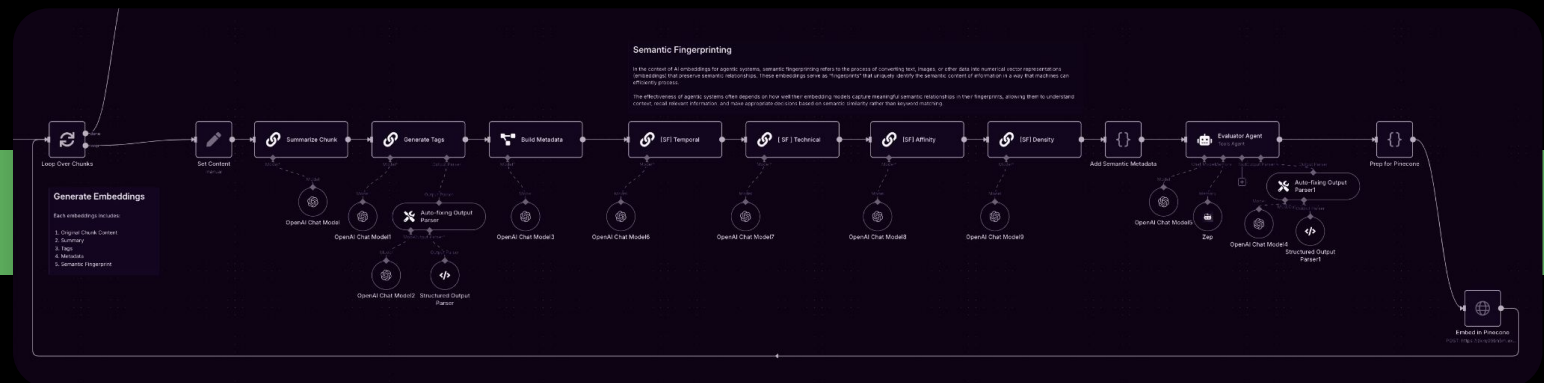
UPLOAD PROCESSOR

Advanced

Features

- Tracks structural metadata (hierarchical relationships and paths)
- Performs content analysis to extract topics and entities
- Establishes relational data between chunks (parent-child, preceding-following)
- Enriches chunks with context, structure, and relationship information

NOTE: Needed significant control over this to accomplish what I wanted so the n8n built-in functionality was not sufficient



Semantic Fingerprinting

UPLOAD PROCESSOR

Advanced

Features

- Creates numerical vector representations of textual content
- Captures semantic relationships between documents
- Enables similarity matching beyond keyword comparison
- Improves retrieval relevance through semantic understanding

This part is pretty easily achieved with built-in n8n nodes

Optional Decomposer

QUERY HANDLER

Advanced

Features

- Breaks complex queries into simpler sub-queries
- Handles multi-step reasoning requirements
- Improves retrieval for questions requiring multiple information pieces
- Enables systematic exploration of related concepts

n8n gets Loops right IMO and this is a perfect example

Vector Search

QUERY HANDLER

Advanced

Features

- Finds top matches based on semantic similarity
- Retrieves documents most relevant to query intent
- Implements efficient approximate nearest neighbor search
- Balances speed and recall for optimal performance

NOTE: Built-in n8n functionality did not allow for the types of filters that I was building



Context Enhancer

QUERY HANDLER

Advanced

Features

- Expands initial results with related contextual information
- Identifies connected chunks based on structural metadata
- Ensures comprehensive coverage of relevant information
- Maintains coherence across retrieved information

NOTE: No n8n built-in

Re-Ranking Context

QUERY HANDLER

Advanced

Features

- Applies secondary ranking to initial search results
- Prioritizes information based on relevance to specific query
- Considers factors beyond vector similarity (recency, authority, etc.)
- Optimizes final context selection for LLM consumption

NOTE: No n8n built-in

Evaluator Agent



- Assesses quality and relevance of retrieved context
- Identifies information gaps requiring additional queries
- Validates factual consistency across sources
- Provides feedback loop to improve retrieval process
- Ensures grounding in accurate information sources



Responder Agent

- Synthesizes retrieved information into coherent responses
- Maintains citation and attribution to source documents
- Handles query ambiguity through clarification steps
- Adapts response format to user preferences
- Leverages multiple tools to optimize answer quality

Thank You For Letting Me Nerd Out!



Let's Build 2025



Erin Wiggers

Director of Technical Strategy and Innovation

@ Engaging.io

Making Technology Accessible, Affordable And Connected To You.

Technology

Our Technology

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Ready For The Future

Technology

History

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Innovate Connect Inspire

Technology

Innovation, Diligence, Perseverance

Technology

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Technology

Portfolio

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The Future Is Now

Not Just Another Tech Company

Technology

A Great Solution Is Our Only Goal

Project

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Technology

Technology

Bring Your Ideas To Life

Our Work

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Building The Future With Tech

Technology



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Inspiring Tech Needs For Business

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Technology



01. Service

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02. Service

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01. Service

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02. Service

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03. Service

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04. Service

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Our Service

Your Partner For Innovations

Technology

Why Choose Us ?



01. Service

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02. Service

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03. Service

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Technology With Trust

Technology



01. Service

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02. Service

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Bio

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viverra fringilla

Caitlyn Jordyn



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Our Expert Team

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Technology

Nicolet Eugenia

Technology

Meet Our Founder

Futuristic

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Meet Our Expert Team

Technology

Carson Evelyn

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Malone Darby

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Dallas Christy

Jayme Carson

Devyn Gabby

Meet Our Excellent Team

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Technology



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Quirine Angelina



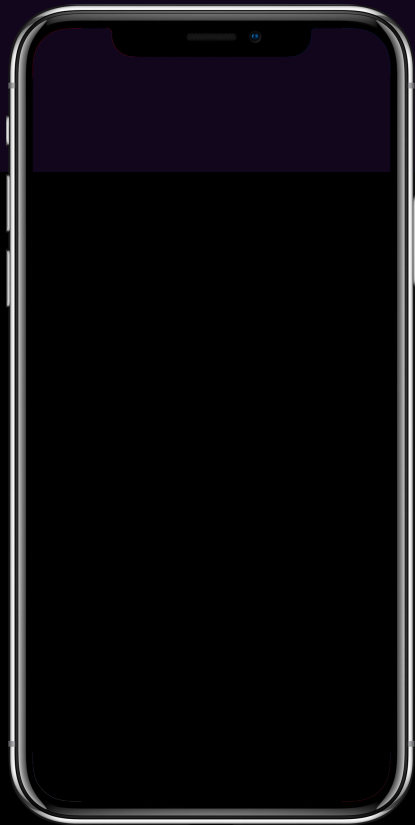
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Technology

Connectivity Networking Experience

Technology



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01. Service

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02. Service

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Choose Your Plan

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Premium

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Enterprise

\$72

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