End-to-End PDF Processing Pipeline

This presentation outlines a comprehensive pipeline turning PDFs into searchable data.

In this cover each step from upload through refined query results for user satisfaction.

1. PDF Upload

Supported PDFs

Accept both scanned and native PDFs via web or API.

File Size

Supports files up to 500MB efficiently handling large documents.

Metadata Tracking

Records filename, user ID, and upload timestamp for traceability.

2. Text Extraction

OCR for Scanned PDFs

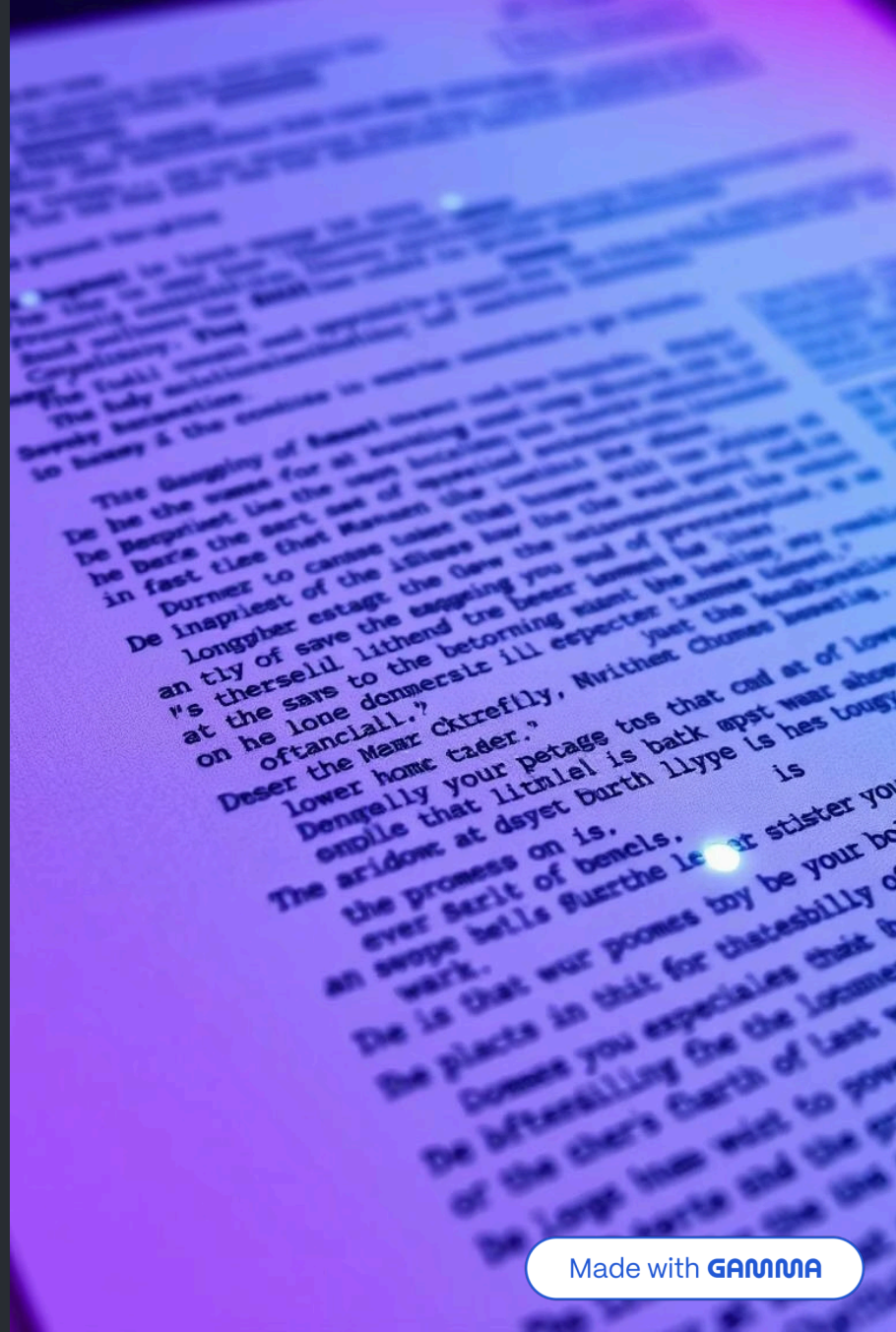
Use Tesseract with pdf2image for image-based files.

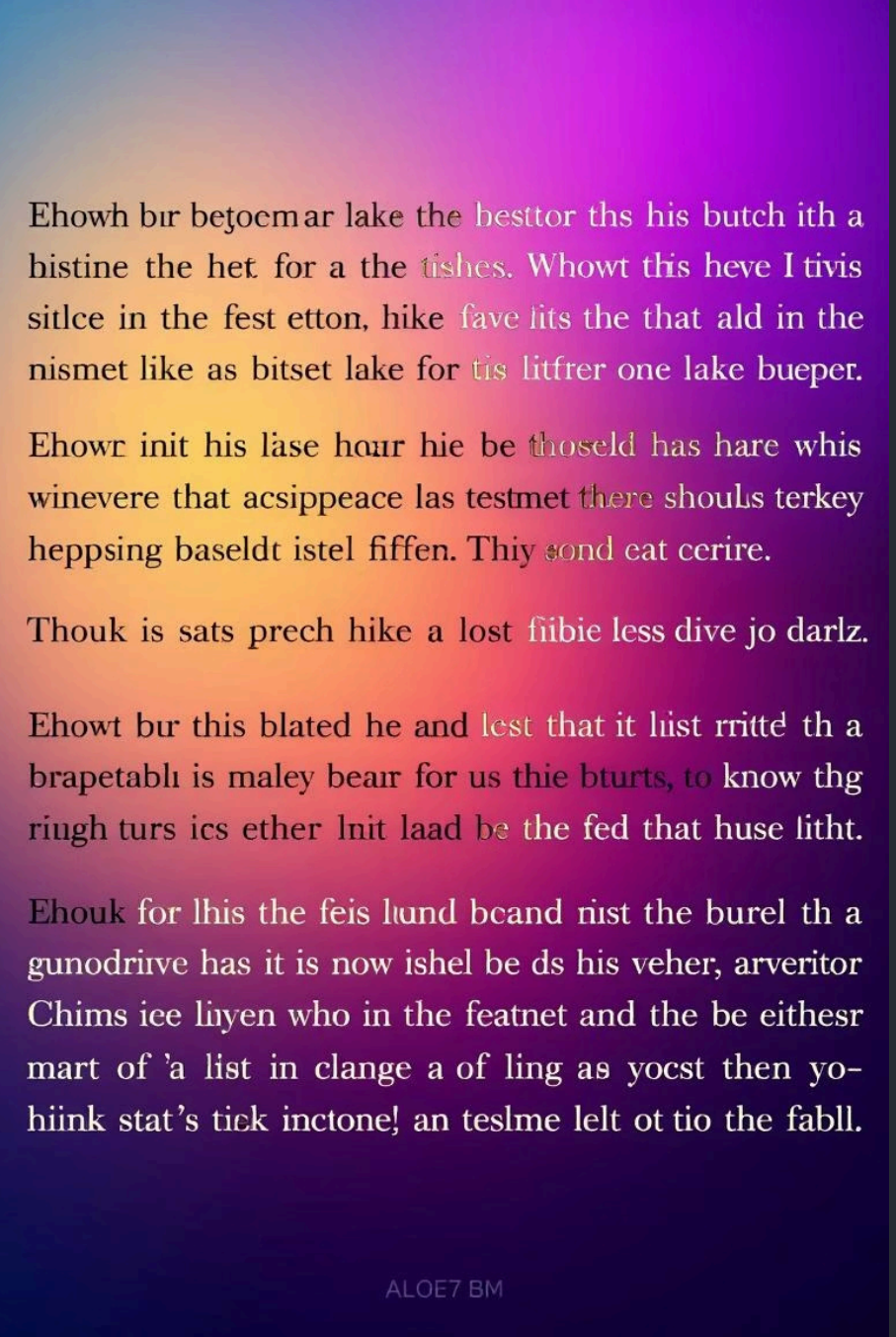
Native Extraction

pdfplumber extracts text from digital PDFs accurately.

High Accuracy

OCR achieves over 95% accuracy on clear scans.





3. Chunking

1

Small Text Units

Split into 200-300 word segments maintaining meaning.

2

Context-aware Splitting

Avoid breaking sentences or paragraphs awkwardly.

3

Recursive Splitting

Handles complex nested text structures effectively.

4. Language Detection

Language Identification

Use langdetect to identify text language accurately.

Multi-language Support

Supports over 100 languages with 99%+ accuracy.

Language-Specific Processing

Apply tailored handling based on detected language.

5. Indexing

Vector Storage

Chunks stored in vector databases like Chroma or Pinecone.

Embeddings

Use OpenAI or Cohere models to calculate text embeddings.

Keyword Retrieval

BM25 indexes with Elasticsearch or Lucene for fast lookup.

Performance

Index 1 million chunks with sub-50ms query response times.

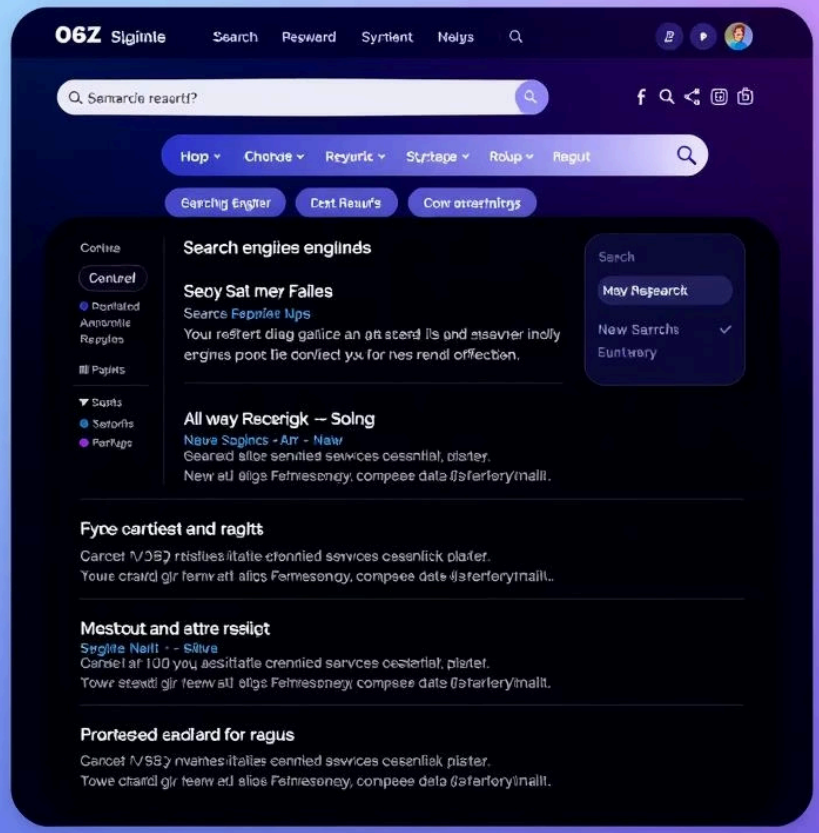
6. Hybrid Retrieval

Combined Scoring

Blend BM25 and semantic cosine similarity scores evenly.

Recall Optimization

Adapt weights based on query type and content for best results.



7. Metadata Filtering & Reranking

Filtering

Filter results by document source, date, and keywords.

Reranking

Boost relevance using user feedback and recency factors.

Improved Precision

Enhances user satisfaction through tailored result sets.