

MLI Demo

Property Analysis with AI

Candidate: Julian Kaljuvee
September 19, 2025

Project Overview

The **MLI Demo** is an AI-powered property analysis platform designed to help real estate professionals make data-driven decisions about industrial properties.

Our solution analyzes **1,255 properties** including 5 newly marketed warehouses to provide actionable insights.



Data Processing : Automated cleaning and standardization



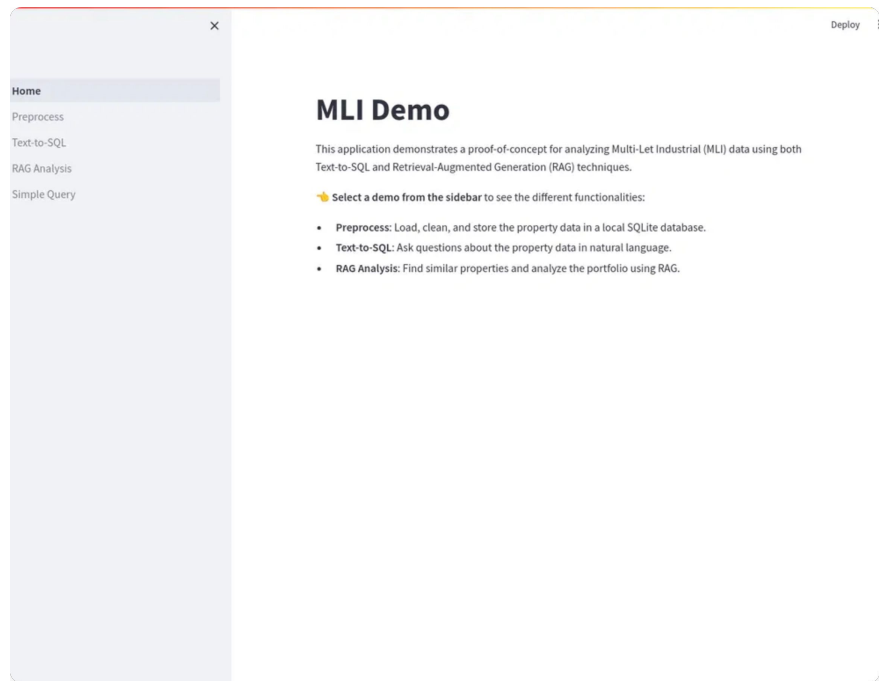
AI-Powered Analysis : Natural language queries to SQL



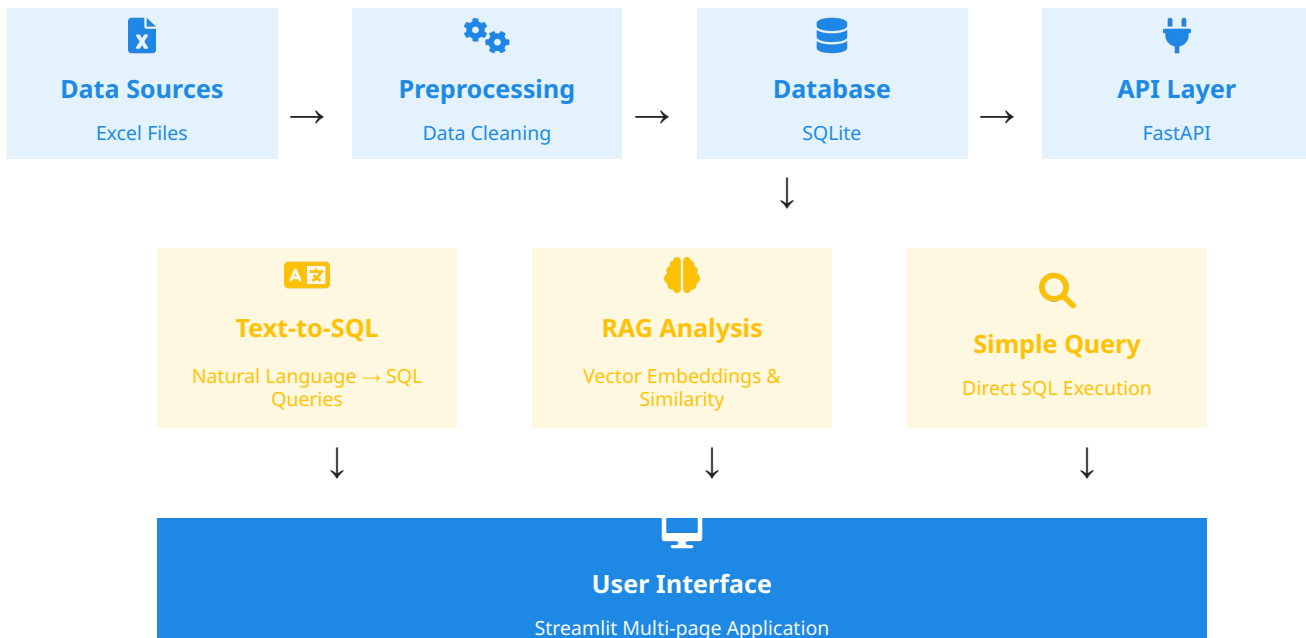
RAG Technology : Vector similarity for property matching



Portfolio Analysis : Correlation and homogeneity metrics



System Architecture



■ Data Processing Layer

■ AI Analysis Layer

■ User Interface Layer

Data Preprocessing

1

Data Loading

Automated loading of Excel files containing property data:

Current Portfolio (1,250 properties)

Marketed Warehouses (5 properties)

2

Data Cleaning

Standardization and normalization of property data:

Missing value imputation

Data type conversion

Coordinate validation

3

Database Storage

Creation of SQLite database with optimized schema for:

Efficient querying

Property relationship modeling

Geographic data indexing

24,405

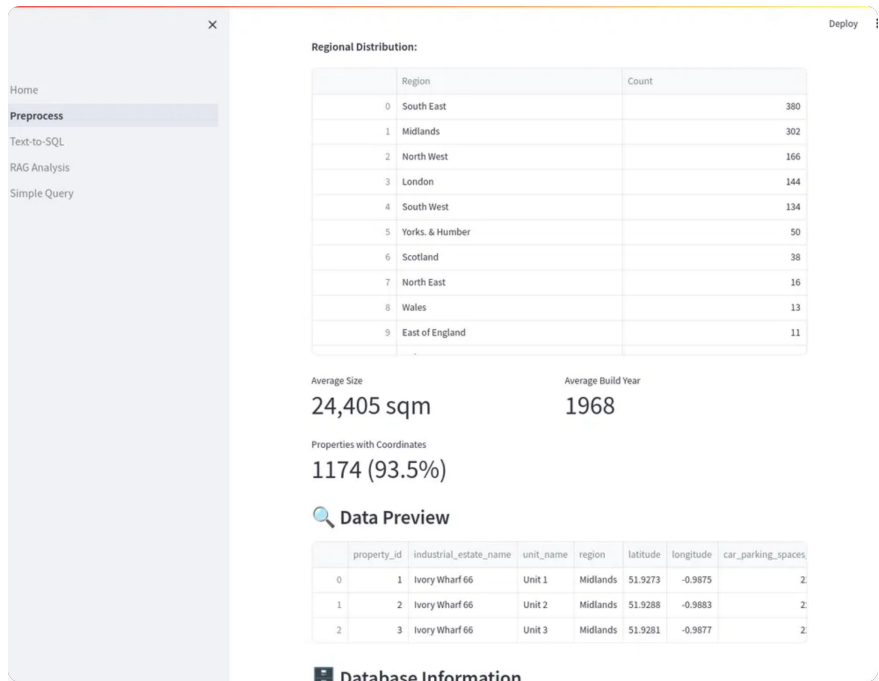
Average Size (sqm)

1968

Average Build Year

93.5%

Properties with
Coordinates



Regional Distribution: South East (380), Midlands (302), North West (166)

Text-to-SQL Functionality

Convert natural language questions into SQL queries with our **AI-powered Text-to-SQL** functionality.



Natural Language Processing

Ask questions in plain English about property data without writing SQL code



Automatic SQL Generation

AI translates questions into optimized SQL queries with proper joins and filters

```
SELECT * FROM properties
WHERE is_marketed = 1
LIMIT 10
```



Complex Query Support

Handles sophisticated analytical queries including:

- Property similarity analysis
- Portfolio correlation metrics
- Geographic proximity calculations

View Database Schema

Sample Questions You Can Ask

Ask a question about the properties:

Find the 10 most similar properties in the estate to the newly marketed property

Get Answer

AI Agent Response

Query executed successfully. Found 10 results.

Results: property_id industrial_estate_name unit_name region latitude longitude car_parking_spaces size_sqm build_year yard_depth_m min_eaves_m max_eaves_m doors epc_rating is_marketed size_diff year_diff 292.0 Cobalt Tower 14 Unit 4 Scotland 56.485662 -2.141144 None 7449.024868 1965.0 0.0 4.90 0.0 None D 0 9.222346 381.2 815.0 Ruby Arc 96 Unit 18 Midlands 53.147603 -2.485929 None 7449.635235 1987.0 0.0 0.00 0.0 None C 0 8.611978 403.2 161.0 Cedar Wharf 40 Unit 5 Midlands 53.109515 -2.111369 None 7448.048222 2013.0 0.0 6.65 0.0 None B 0 10.198992 429.2 931.0 Ruby Tower 24 Unit 11 South East 51.272650 -0.931836 None 7428.270805 2000.0 0.0 8.00 12.0 None E 0 29.976409 416.2 308.0 Bronze Pointe 61 Unit 1 South East 50.892339 -0.649345 None 7431.634923 2006.0 0.0 0.00 0.0 None D 0 26.612291 422.2 257.0 Steel Junction 81 Unit 3 South East 52.210894 -0.264549 None 7414.322743 1989.0 0.0 4.75 0.0 None D 0 43.924471 405.2 1193.0 Scarlet Junction 67 Unit 1 North West 0.000000 0.000000 None 7438.439119 2019.0 0.0 0.00 0.0 None Not Available 0 19.808095 435.2 1.0 Ivory Wharf 66 Unit 1 Midlands 51.927270 -0.987484 None 7508.729478 1999.0 0.0 4.00 5.2 None Not Available 0 50.482264 415.2 773.0 Crimson Forge 9 Unit 13 Midlands 52.221370 -1.028099 None 7498.570149 2016.0 0.0 0.00 0.0 None A 0 40.322935 432.2 167.0 Jade Bridge 6 Unit 1 Midlands 53.432961 -2.089529 None 7542.173864 1977.0 0.0 5.50 0.0 None B 0 83.926650 393.2

Example: "Find the 10 most similar properties in the estate to the newly marketed property"

RAG Analysis

RAG (Retrieval-Augmented Generation) technology enables powerful property similarity analysis through vector embeddings.

Vector Embeddings

Properties are converted to numerical vectors capturing key characteristics like location, size, and features.

Similarity Search

FAISS index enables rapid similarity calculations across the entire portfolio of 1,255 properties.

Portfolio Analysis

Homogeneity metrics reveal how similar marketed properties are to the existing portfolio.

0.787

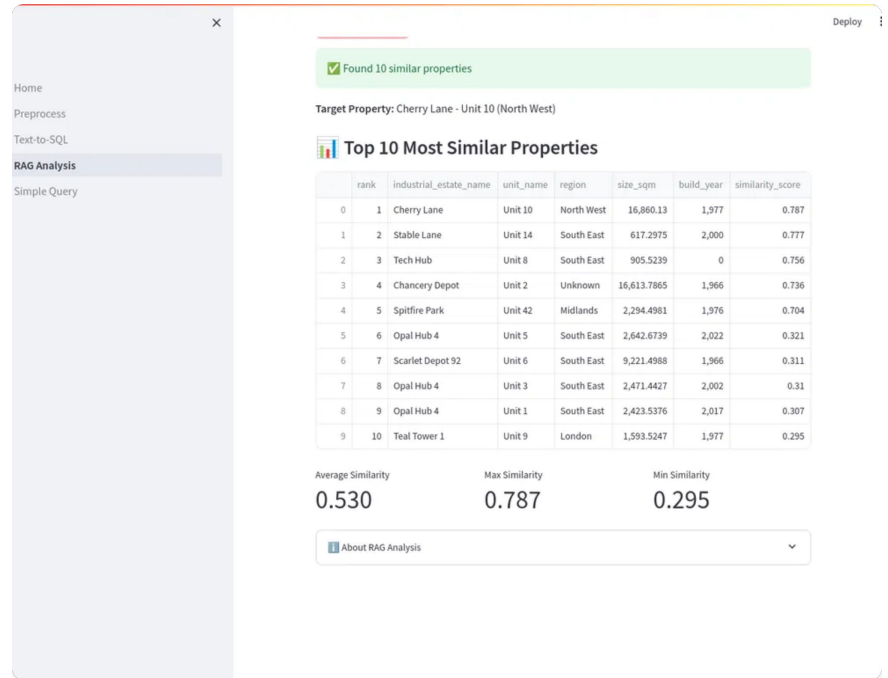
Max Similarity

0.530

Average Similarity

0.295

Min Similarity



Top 10 similar properties to Cherry Lane - Unit 10 (North West)

Business Use Cases

MLI Property Analysis



Property Similarity Analysis

Find properties in your portfolio that are most similar to newly marketed properties.

"Find the 10 most similar properties in the estate to the newly marketed property"



Portfolio Homogeneity Analysis

Analyze how well new properties fit with your existing portfolio characteristics.

"Provide a correlation score for the homogeneity of the marketed property(ies) with the rest of the estate"



Geographic Proximity Analysis

Find properties based on location criteria and proximity to urban centers.

"Find the closest properties to the marketed property, after excluding any property more than 10 miles from a major city"

Live Demo

Experience the **MLI Demo** in action with our interactive property analysis platform.

- 1 **Preprocess Data** : Load and clean property data from Excel files
- 2 **Text-to-SQL** : Ask natural language questions about the properties
- 3 **RAG Analysis** : Find similar properties using vector embeddings
- 4 **Simple Query** : Run predefined SQL queries for quick insights

Access the Demo

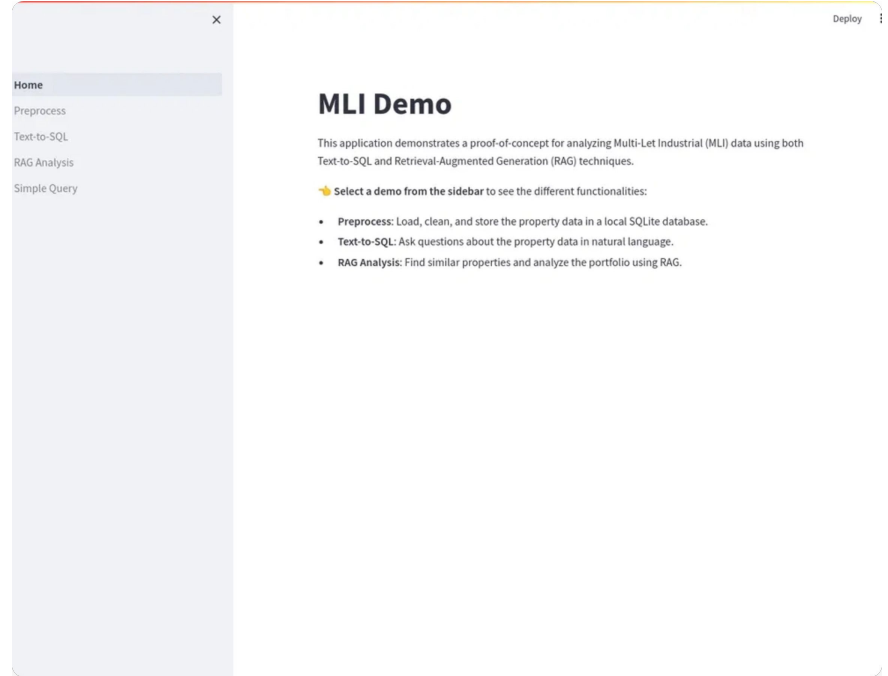
The MLI Demo is available for testing and evaluation:



<http://mli-rag-demo.streamlit.app>



github.com/kaljuvee/mli-rag-demo



The demo showcases all key features of the MLI property analysis platform, including data preprocessing, natural language querying, and vector-based similarity analysis.

Try these sample queries: