SUBMISSION DELIVERABLES MAPPING

Hybrid RAG System with Automated Evaluation

GitHub Repository: https://github.com/vishalvishal099/Hybrid_RAG_System_with_Automated_Evaluation

Contributors

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1. EVALUATION COMPONENTS

Question Generation

Component	File	GitHub Link
Question Generation Script	src/question_generation.py	View
Dataset Creation	evaluation/create_dataset.py	View

100-Question Dataset (JSON)

File	Description	GitHub Link
data/questions_100.json	100 Q&A pairs for evaluation	View
data/adversarial_questions.json	30 adversarial questions	View

Evaluation Pipeline

Component	File	GitHub Link
Main Evaluation Script	evaluate_chromadb_fast.py	View
Evaluation Pipeline	evaluation/pipeline.py	View
Run Evaluation	evaluation/run_evaluation.py	View

Metrics Implementation

Metric	File	GitHub Link
Core Metrics (MRR, Recall, F1)	evaluation/metrics.py	View
Comprehensive Metrics	evaluation/comprehensive_metrics.py	View
Novel Metrics	evaluation/novel_metrics.py	View
Innovative Evaluation	evaluation/innovative_eval.py	View

Innovative Components

Component	Description	File	GitHub Link
Adversarial Testing	30 adversarial questions	data/adversarial_questions.json	View
Ablation Studies	Dense vs Sparse vs Hybrid	evaluation/run_evaluation.py	View
Error Analysis	Failure categorization	error_analysis.py	View
Novel Metrics	Entity Coverage, Diversity, Hallucination	evaluation/novel_metrics.py	View

2. REPORT (PDF)

Main Report

File	Description	GitHub Link
Hybrid_RAG_Evaluation_Report.pdf	Complete PDF report	Download
Hybrid_RAG_Evaluation_Report.md	Markdown version	View

Architecture Diagram

File	Description	GitHub Link
docs/architecture_diagram.png	System architecture	View
docs/data_flow_diagram.png	Data flow diagram	View

Evaluation Results with Tables/Visualizations

File	Description	GitHub Link
evaluation_results_chromadb.csv	Detailed results (300 rows)	View
evaluation_summary_chromadb.json	Summary statistics	View
docs/retrieval_heatmap.png	Performance heatmap	View

Innovative Approach Description

File	Description	GitHub Link
docs/NEW_FEATURES.md	New features documentation	View
docs/METRIC_JUSTIFICATION.md	Metric justification	View

Ablation Studies

Component	Location	GitHub Link
Dense vs Sparse vs Hybrid comparison	evaluation_results_chromadb.csv	View
Method comparison in report	Hybrid_RAG_Evaluation_Report.pdf	Download

Error Analysis

File	Description	GitHub Link
error_analysis.py	Error analysis script	View
docs/error_analysis_charts.png	Error analysis visualizations	View
submission/06_documentation/ERROR_ANALYSIS.md	Error analysis documentation	View

System Screenshots (3+)

Screenshot	Description	GitHub Link
1_Hybrid_full_page.png	Hybrid retrieval mode	View
2_Dense_full_page.png	Dense retrieval mode	View
3_Sparse_full_page.png	Sparse retrieval mode	View
Data_load_retrieval_method.png	Data loading interface	View
project_SoureCode.png	Project source code	View

3. INTERFACE

Streamlit Application

Component	File	GitHub Link
Streamlit UI	app_chromadb.py	View
FastAPI Backend	api_chromadb.py	View

Setup Instructions

```
# Clone repository
git clone
https://github.com/vishalvishal099/Hybrid_RAG_System_with_Automated_Evalua
tion.git
cd Hybrid_RAG_System_with_Automated_Evaluation

# Create virtual environment
python -m venv venv
source venv/bin/activate  # Windows: venv\Scripts\activate

# Install dependencies
pip install -r requirements.txt

# Build vector database (if not exists)
python build_chromadb_system.py

# Run Streamlit Dashboard
streamlit run app_chromadb.py

# Run FastAPI Server (alternative)
uvicorn api_chromadb:app --reload
```

4. README.md

Main Documentation

File	Description	GitHub Link
README.md	Main project documentation	View

Contents of README.md

Section	Description
Installation Steps	Complete setup guide
Dependencies	requirements.txt reference
Run Instructions	System and evaluation commands
Fixed URLs Reference	Link to fixed_urls.json

Dependencies

File	Description	GitHub Link
requirements.txt	Python dependencies	View
config.yaml	System configuration	View

5. DATA FILES

Fixed URLs (200 Wikipedia URLs)

File	Description	GitHub Link
data/fixed_urls.json	200 fixed Wikipedia URLs in JSON format	View

Preprocessed Corpus

File	Description	GitHub Link
data/corpus.json	Preprocessed corpus (7,519 chunks)	View

Vector Database

Location	Description	Regeneration Instructions
chroma_db/	ChromaDB vector database	Run `python build_chromadb_system.py`

Regeneration Command:

```
python build_chromadb_system.py
```

100-Question Dataset

File	Description	GitHub Link
data/questions_100.json	100 Q&A evaluation pairs	View

Evaluation Results

File	Description	GitHub Link
evaluation_results_chromadb.csv	Detailed results (300 rows)	View
evaluation_summary_chromadb.json	Summary statistics	View

Regeneration Command:

```
python evaluate_chromadb_fast.py
```

6. SUBMISSION FOLDER STRUCTURE

Folder	Contents	GitHub Link
submission/01_source_code/	All Python source files	View

Folder	Contents	GitHub Link
submission/02_data/	Corpus and question datasets	View
submission/03_vector_database/	ChromaDB files	Refer instructions to setup vectorDB
submission/04_evaluation_results/	CSV and JSON results	View
submission/05_reports/	PDF and MD reports	View
submission/06_documentation/	Documentation files	View
submission/07_visualizations/	Charts and diagrams	View
submission/08_screenshots/	UI screenshots	View

Quick Reference

Requirement	Location
Question Generation Script	src/question_generation.py
100-Question Dataset (JSON)	data/questions_100.json
Evaluation Pipeline	evaluate_chromadb_fast.py
Metrics Implementation	evaluation/metrics.py
Innovative Components	evaluation/novel_metrics.py
PDF Report	submission/05_reports/Hybrid_RAG_Evaluation_Report.pdf
Architecture Diagram	docs/architecture_diagram.png
Evaluation Results	evaluation_results_chromadb.csv
Ablation Studies	evaluation_results_chromadb.csv (3 methods)
Error Analysis	error_analysis.py, docs/error_analysis_charts.png
System Screenshots (3+)	screenshots/ (5 screenshots)
Streamlit Interface	app_chromadb.py
README.md	README.md
Fixed 200 URLs (JSON)	data/fixed_urls.json
Preprocessed Corpus	data/corpus.json
Vector Database	chroma_db/ (regenerate with build script)

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