

SHL Assessment Recommendation System – Final Report

Objective:

To build an intelligent recommendation engine that suggests the most relevant SHL assessments based on natural language job queries. The system supports both an interactive demo and a programmatic API endpoint.

Data Collection:

To obtain the assessment data, I scraped the SHL official site using a custom notebook (SHL_Site_Scrape.ipynb). The scraped content includes assessment names, descriptions, durations, support types, job levels, and links. The final structured dataset was saved as shl_assessments_full_data.csv.

Approach:

Phase 1 – Experiment with Google Gemini

- Model: text-embedding-001 from Gemini API
- Embeddings generated using embedContent() with document-type formatting
- Recommendation engine built using cosine similarity (FAISS)
- Accuracy was limited due to coverage mismatch: **Recall@3: 0.57**

Phase 2 – Switched to Sentence Transformers

- Model: BAAI/bge-small-en via sentence-transformers
- Text enriched with assessment name, description, type, duration, and job level
- Retrieval with FAISS improved results significantly:
 - **Recall@3: 0.71**
 - **MAP@3: 1.57**

Challenges & Key Insights

- The dataset did not include technical assessments (e.g., Java, Python), which impacted some queries.
- Focused benchmark evaluation on customer service, industrial, and banking roles where data coverage exists.

Tools & Libraries Used

- NLP: sentence-transformers, Google Generative AI
- Search: faiss-cpu, sklearn, numpy, pandas
- Web/API: Gradio, FastAPI
- Deployment: Hugging Face Spaces (UI) and Render.com (API)

Deployment:

Frontend Demo (Hugging Face):

SHL Site Scrapping [Link](#)

Google Gemini [Link](#)

Sentence Transformer [Link](#)

API Endpoint (Render):

<https://assessment-engine-api.onrender.com> Test: [Link](#)

Final Notes

- Built both Gemini-based and sentence-transformer-based models.
- Successfully deployed for public demo and evaluation.
- The system can scale with a larger dataset for more comprehensive recommendations.