Exam | Redis for AI exam

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85%

You got 17 out of 20 points.

Submitted on February 17, 11:46 am CST
Graded on February 17, 11:46 am CST

Correct!

1 Which of the following statements about Redis Stack's full-text search and semantic search is true?

- Redis Stack's full-text search primarily relies on semantic analysis to provide relevant search results
- ✓ Redis Stack's full-text search can include synonyms, base forms, and phonetic matching to improve search accuracy
- Semantic search in Redis Stack is primarily based on literal word matching
- Redis Stack's full-text search always accurately interprets the semantic meaning of user queries

Correct!

2 What role do vectors play in representing unstructured data for tasks like semantic similarity?

- Vectors are primarily used for image and audio data but are less relevant for text data
- ✓ Vectors help represent unstructured data as lists of floating point numbers for easy computer processing
- Vectors are only used for representing color codes in RGB format
- Vectors are not relevant in the context of machine learning models for unstructured data

Correct!

3 What is the purpose of generating vector embeddings from unstructured data?

- To make data more complex and harder to manage
- To decrease the overall size of the data
- ✓ To transform unstructured data into a lower-dimensional space while preserving its original features
- To convert data into text format

Correct!

4 How is the similarity of two objects, such as two texts expressing the same concepts, translated in the context of vector embeddings?

- It is calculated as a percentage value based on textual content
- It is not calculable using vector embeddings
- ✓ It is determined by a simple mathematical operation, which is the distance between vectors
- It is measured using pre-trained transformer models

Correct!

5 What is the primary purpose of Vector Similarity Search (VSS)?

- To convert vectors into text data
- To calculate the angle between vectors
- To create visual representations of vectors
- ✓ To find data points similar to a given query vector in a set of vectors

Correct!

6 What does the cosine similarity metric rely on when calculating the similarity between two vectors in a two-dimensional space?

- The sum of the vector's components
- The absolute difference between the vector's components
- ✓ The angle between the two vectors
- The product of the vector's components

Correct!

7 **What does a cosine similarity score close to one indicate when comparing pairs of vectors?**

- ✓ (●) High similarity between the two vectors
- ( ) Low similarity between the two vectors
- ( ) A significant difference in dimensionality between vectors
- ( ) A failure in the calculation of the cosine similarity

Correct!

8 **What is the primary difference between Euclidean distance and Cosine similarity as distance metrics for similarity search?**

- ( ) Euclidean distance considers the angle between vectors, while Cosine similarity calculates the distance between two data points on a plane
- ( ) Euclidean distance is mainly used for high-dimensional vector spaces, whereas Cosine similarity works best with low-dimensional data
- ( ) Euclidean distance relies on projecting one vector onto another, while Cosine similarity considers only the magnitude of vectors
- ✓ (●) Euclidean distance focuses on the magnitude of vectors, while Cosine similarity is based on the angle between vectors

Correct!

9 Which of the following are advantages of modeling and storing vectors in Hash or JSON documents in Redis Stack Server compared to other data structures? (Select 2)

- ✓ [x] It allows Redis to search through the space of vectors efficiently
- ✓ [x] It provides native support for vectors
- [ ] It is more memory-efficient
- [ ] It offers out-of-the-box conversion of unstructured data to the target document type

Correct!

10 What is one key difference between using the FLAT and the HNSW algorithms in Redis as a Vector Database?

- The FLAT method provides speedy search results, while the HNSW algorithm is more accurate but slower
- ✓ The FLAT method is suitable for smaller datasets, while the HNSW algorithm is designed for larger datasets
- The FLAT method is probabilistic, while the HNSW algorithm compares the test vector to all vectors one by one
- The FLAT method and the HNSW algorithm have similar performance characteristics

Correct!

11 Which of the following distance metrics are supported by Redis for vector searches?

- Only the FLAT indexing method
- ✓ L2, IP, and COSINE
- HNSW and FLAT
- Only the HNSW indexing method

Correct!

12 **How can Vector Similarity Search (VSS) be combined with other querying mechanisms in Redis?**

- ✓ VSS can be combined with all the querying mechanisms to create hybrid queries
- VSS can only be used as a standalone querying mechanism in Redis
- VSS can only be combined with TEXT fields in hybrid queries
- Other querying mechanisms can be adopted exclusively for JSON documents

Correct!

13 Which of the following are true if an index is created using the following definition? (Select 2)

```
FT.CREATE doc_idx
ON JSON
PREFIX 1 doc:
SCHEMA
$.content as content TEXT
$.genre AS genre TAG
```

```
$.embedding VECTOR HNSW 6 TYPE FLOAT32 DIM 384 DISTANCE_METRIC
COSINE
```

- [ ] Range search is not possible with the given definition
- ✓ [x] Hybrid search is supported for all the fields specified by the index
- [ ] Vector embeddings must be at least 384 elements long
- ✓ [x] It is possible to search for vectors comprised within a distance from the test vector

Incorrect

14 What is true about the following search command?

```
FT.SEARCH vector_idx "*=>[KNN 3 @embedding $vector AS
vector_distance]"
RETURN 2 content vector_distance
SORTBY vector_distance ASC
DIALECT 2
LIMIT 0 1
PARAMS 2 vector "\x8c\xc2\n\xbd\xecK\xbc= [...]"
```

- ✓ ( ) The query vector must be provided as a binary blob
- ( ) The command is executing hybrid search
- ✗ (•) The command is a pure Vector Similarity Search on the "vector_distance" field
- ( ) The command returns the 3 most similar entries according to KNN search

Incorrect

15 What is RedisVL?

- ( ) A specialized programming language for Redis
- ( ) A graphical tool for managing Redis databases
- ✗ (•) A machine learning framework integrated with Redis
- ✓ ( ) An experimental library for storing and manipulating unstructured data in Redis

Correct!

16 What client libraries integrate semantic caching natively?

- All the supported client libraries
- Only the redis-py client library for Python
- ✓ Only RedisVL
- No client library supports semantic caching

Incorrect

17 Which of the following are key differences between working with Hashes and JSON documents when storing and searching vectors? (Select 2)

- Hashes require a more extensive schema definition than JSON documents
- ✓ JSON documents can store and index more than one vector embedding, while Hashes only one
- ✗ Hashes have a larger memory footprint compared to JSON documents
- ✓ JSON documents store vectors as lists of floating point numbers. Hashes store vectors using the binary blob format

Correct!

18 What role can Redis play in addressing the challenges of LLM-based conversational AI use cases?

- Redis helps in training LLMs on fresh data
- Redis provides a platform for fine-tuning LLMs
- ✓ Redis enables context retrieval for RAG
- Redis assists in freezing the training set in time

Correct!

19 How can Retrieval Augmented Generation (RAG) with Redis assist in providing relevant responses in a conversational AI context?

- By retraining the entire model to incorporate external knowledge
- By generating responses without external knowledge sources
- By minimizing the need for careful prompt engineering
- ✓ By conducting semantic searches with the vector search capability of Redis

Correct!

20 **What are the key roles of Redis in enhancing LLM-based use cases for conversational AI? (Select 2)**

- [ ] Storing and indexing textual data for full-text search
- [ ] Converting unstructured data with the onboard embedding model and storing it
- [x] Enabling efficient semantic caching using vector search
- [x] Managing the conversation history to retrieve relevant memories for a meaningful conversation

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