Lecture 39

-- job opportunity ...
with learning rare ...

"Quality of response is matter"

- rare learning

job opportunity
↓
4th positions ✓
~ 24 positions
agenda → winning Team

Vector Stores

- vector store
- cloud storage
- Local storage

- earlier data stored in rows & columns
  ↳ RDMS
- vector → Representational
  ↳ Vector database / vector store
- different from conventional db
- vector store mainly used in recommendatio.

"vector store are specialized databases optimized for storing & querying high dimensional vector data".

- efficently store & retreive vector

feature
- high speed similarity search
- scalability integration

⇒ each vector database have far 4 mai:

① vector / vector embedding

② vector metadata
(information about data)

③ Orignal information/data (⋯)

④ unique id

n each vector

How vector store works

① cosine similarity

② dot product

جس چیز کے متعلق ڈھونڈنا ہے وہ vector بنا

کے سکور دیتے ① سے نیچے k / تک آ جاتا.

especially in recommender system

for example 1 vector store 1 millon embedding

many algorithms ↵

business point of view

- further research
- horror story (know the vocabulary)
- why" why are you doing.

cloud cost

Lang Chain & Vector Store →
- ① fully manged service/ cloud (third party) (api)
- ② locally manged database (mange itself all by yourself) → resource cost

↳ provide seamless integratn

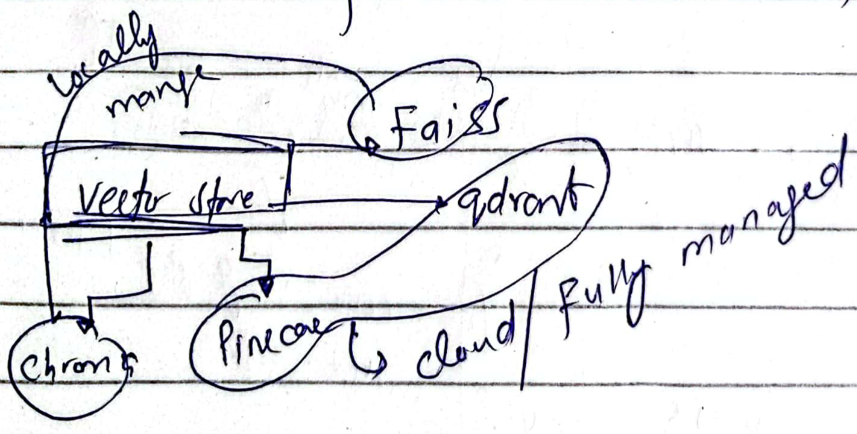
Benefits
- efficient data storage
- fast retrieval
- improved semantic understandg

why vector.

Textual data (computer can't understand) $\xrightarrow{\text{embeddig model}}$ vector form (numbers) (computer can understand by comparig vector value)

• Processig can't understand textual data
• meaningful information

facebook ai semantic search



FAISS

↳ library for effi—

use cases

① u in RAG (Semantic Search)

② → recommendation system

(preferences, queries,

③ → Anomaly detection

∴ can be multiple use cases. depend on critical thinking

Pine cone architecture

components
- index
- namespace
- meta-data support

index ↔ vector store

each index multiple namespaces

↓

for concept of partitions

wese جیسے index ایک ہے.

store ایک مگر

partitions ہیں (namespace)

Qdrant

cluster — multiple namespace
(vector stores)

- pinecone, quadrant → fully manged.
  login → project → vector store
  (different names on different platform)

pinecone → index
qdrant → cluster

Practical

- review of previous 3 steps.

- embedding model (∴ BAAI/bge-small-en-v1.5)
  - ✓ load the model (PyPDF ~~loader~~)
  - ✓ Splitting data into chunks
  - ✓ meta data pre-processing (edit meta data)
    (splitting page into chunks)

- updated meta data (you define of our own

Manged Servicy

- Qdrant credential

url

key

collectionname

automatically manges embeddings.

(directly creat

- Do not repeat reduntant time

∴ K ⇒ number of chunks

↓ important question

qdrant.similarity_search

query → vector form → vector store)

cosine similarity

ایک vector کو دوسرے vector سے

کتنا فاصلہ (distance) ہے

- Pine cone

same method

vector.similarity_search

Pinecone – Serless (data store + retrive) cost

Pinecone – Pods (store + space + retry)

⇓

cost

→ update your knowledge latest

→ necessary & critical step