



SUPERIOR UNIVERSITY

Programming For Artificial Intelligence (Lab) *Assignment - 12*

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Program:

Artificial Intelligence.

Section:

BSAI-4A

Question # 1:

Then create your own QnA Bot from the topic you selected in Lab 10, using the same pipeline

Note:

Please note that the file by the name of model.ipynb shows all the EDA on the dataset and flask uses the code from model.py to import out model.

model.py:

```
import pandas as pd
import numpy as np
from sentence_transformers import SentenceTransformer
import faiss

dataset=pd.read_csv("spacenews.csv")
news_dataset=dataset[["title","author","content","date"]]
news_dataset.dropna(inplace=True)
import re
def clean_text(text):
    text=text.lower()
    text=re.sub(r'^a-zA-z0-9\s',' ',text)
    text=re.sub(r'\s+',' ',text)
    return text
news_dataset["clean_content"]=news_dataset["content"].apply(clean_text)
model=SentenceTransformer('all-MiniLM-L6-v2')
# embeddings=model.encode(news_dataset["clean_content"].values)
# embeddings=np.array(embeddings)
# np.save("content_embeddings.npy",embeddings)
```

```
embeddings=np.load("content_embeddings.npy")
dimension=embeddings.shape[1]
faiss_index=faiss.IndexFlatL2(dimension)
faiss_index.add(embeddings)
# faiss.write_index(faiss_index,"content_faiss_index.index")
def get_similar_news(query,model=model,faiss_index=faiss_index,count=3):
    query_embedding=model.encode([query])
    distance,indices=faiss_index.search(query_embedding,count)
    results=[]
    for i in range(count):
        idx = indices[0][i]
        news_item = {
            "title": news_dataset["title"].iloc[idx],
            "author": news_dataset["author"].iloc[idx],
            "date": news_dataset["date"].iloc[idx],
            "content": news_dataset["content"].iloc[idx]
        }
        results.append(news_item)
    return results
```

app.py:


```
from flask import Flask, render_template, request
from model import get_similar_news

app = Flask(__name__)
```

```
@app.route("/", methods=["GET", "POST"])
def home():
    results=None
    query=""
    message=""
    if request.method=="POST":
        query=request.form.get("query")
        if query:
            results=get_similar_news(query)
            if not results:
                message="No news found for your query. Please try different keywords."
        return
    render_template("index.html",results=results,query=query,message=message)

if __name__ == "__main__":
    app.run(debug=True)
```

Output:

 **Space News Search**

Top 3 Results:

Chavez: Capitalism May Have Killed Off Martians [Reuters]

Author: Reuters | **Date:** October 1, 2011

If you have wondered why no life has been found on Mars, Venezuelan President Hugo Chavez has the answer, reports Reuters : Capitalists may have destroyed it. "I have always said, heard, that it would not be strange that there had been civilization on Mars, but maybe capitalism arrived there, imperialism arrived and finished off the planet," Chavez said March 22. The assertion was part of a speech by the Venezuelan leader marking the occasion of World Water Day.

A new look for life on Mars

Author: Leonard David | **Date:** January 15, 2020

Mars has been taunting researchers for decades as to whether or not the Red Planet has ever been — or is today — an abode for life. Next year, multiple nations are launching spacecraft to Mars (China, Europe, United States, the United Arab Emirates) drawn once again to help unravel the complexities of that world and tease out clues as to whether or not it could be an extraterrestrial habitat for life. NASA has called for a set of Mars exploration concepts in addition to, or after, robotically returning Martian specimens to Earth. A Mars Architecture Strategy Working Group is charting a wide range of

Documentation:

This project is a Space News Search Web Application built using Flask for the backend and HTML/CSS for the frontend. It allows users to enter queries related to space topics, such as satellites, Mars, or space missions, and retrieves the most relevant news articles from a dataset using semantic search. The search functionality is powered by a SentenceTransformer model to generate embeddings and FAISS for efficient similarity search. The app displays the title, author, date, and content of the top 5 relevant news articles in a clean and user-friendly interface. All HTML, CSS used in this project were written by **ChatGPT**.