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#EXCLLER DAY-7(198)
!pip install gensim nltk spacy

import re
import gensim
from nltk.stem.porter import PorterStemmer
from nltk.corpus import stopwords
import spacy
import nltk

# Download necessary NLTK resources
nltk.download('stopwords')

# Load SpaCy's English model
nlp = spacy.load("en_core_web_sm")

# Initialize stemmer and stopwords set
porter_stemmer = PorterStemmer()
stop_words = set(stopwords.words('english'))

def preprocess_text(text):
    # Convert text to lowercase and remove punctuation
    text = re.sub(r'[^\w\s]', '', text.lower())

    # Tokenization using gensim's simple_preprocess
    tokens = [word for word in gensim.utils.simple_preprocess(text) if word not in stop_words]

    # Stemming using PorterStemmer
    stemmed_tokens = [porter_stemmer.stem(token) for token in tokens]

    # Lemmatization using SpaCy
    doc = nlp(' '.join(stemmed_tokens))
    lemmatized_tokens = [token.lemma_ for token in doc]

    return lemmatized_tokens

# Sample text for processing
text_content = """
Write a Python script that uses Gensim to preprocess data from a sample text
file. Follow basic procedures like tokenization, stemming, and lemmatization.
Print the final output to verify the preprocessing steps.
"""

# Process the text
processed_text = preprocess_text(text_content)

# Print the result
print(processed_text)

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Requirement already satisfied: gensim in /usr/local/lib/python3.11/dist-packages (4.3.3)
Requirement already satisfied: nltk in /usr/local/lib/python3.11/dist-packages (3.9.1)
Requirement already satisfied: spacy in /usr/local/lib/python3.11/dist-packages (3.7.5)
Requirement already satisfied: numpy<2.0,>=1.18.5 in /usr/local/lib/python3.11/dist-packages (from gensim) (1.26.4)
Requirement already satisfied: scipy<1.14.0,>=1.7.0 in /usr/local/lib/python3.11/dist-packages (from gensim) (1.13.1)
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Requirement already satisfied: regex>=2021.8.3 in /usr/local/lib/python3.11/dist-packages (from nltk) (2024.11.6)
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Requirement already satisfied: spacy-legacy<3.1.0,>=3.0.11 in /usr/local/lib/python3.11/dist-packages (from spacy) (3.0.12)
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Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3.11/dist-packages (from spacy) (24.2)

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[nltk_data] Downloading package stopwords to /root/nltk_data...
[nltk_data] Package stopwords is already up-to-date!
['write', 'python', 'script', 'use', 'gensim', 'preprocess', 'data', 'sampl', 'text', 'file', 'follow', 'basic', 'procedur', 'like',

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