# NLTK Sentiment Analysis Cheat Sheet:

# Import NLTK and relevant modules:

import nltk

from nltk.tokenize import word\_tokenize

from nltk.corpus import stopwords

from nltk.stem import PorterStemmer

from nltk.stem import WordNetLemmatizer

from nltk.sentiment import SentimentIntensityAnalyzer

# Download NLTK resources:

nltk.download('punkt')

nltk.download('stopwords')

# Function to preprocess text:

def preprocess\_text(text):

# Tokenize the text into words:

tokens = word\_tokenize(text.lower())

# Remove stopwords:

stop\_words = set(stopwords.words('english'))

filtered\_tokens = [word for word in tokens if word not in stop\_words]

# Stemming:

stemmer = PorterStemmer()

stemmed\_tokens = [stemmer.stem(word) for word in filtered\_tokens]

# Lemmatization:

lemmatizer = WordNetLemmatizer()

lemmatized\_tokens = [lemmatizer.lemmatize(word) for word in stemmed\_tokens]

return lemmatized\_tokens

# Function to analyze sentiment and generate response:

def analyze\_sentiment\_and\_generate\_response(text):

sia = SentimentIntensityAnalyzer()

sentiment\_scores = sia.polarity\_scores(text)

compound\_score = sentiment\_scores['compound']

if compound\_score >= 0.05:

return "I'm glad to hear that!"

elif compound\_score <= -0.05:

return "I'm sorry to hear that. Is there anything I can do to help?"

else:

return "Thanks for sharing. Let me know if you have any other questions."

# Function for chatbot interaction loop:

def chat():

print("Hello! I am a chat bot. How are you doing today?")

while True:

message = input("> ").lower()

if message.lower() == 'bye':

print("Goodbye! Have a great day.")

break

else:

processed\_message = preprocess\_text(message)

processed\_message\_str = ' '.join(processed\_message)

response = analyze\_sentiment\_and\_generate\_response(processed\_message\_str)

print(response)

# Main entry point:

if \_\_name\_\_ == "\_\_main\_\_":

chat()

* Compound Score > +0.05: Generally considered positive sentiment.
* -0.05 ≤ Compound Score ≤ +0.05: Generally considered neutral sentiment.
* Compound Score < -0.05: Generally considered negative sentiment.