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import nltk
from nltk.corpus import stopwords
from nltk.tokenize import word_tokenize
from nltk.stem import WordNetLemmatizer

nltk.download('punkt')
nltk.download('stopwords')
nltk.download('wordnet')

def preprocess_text(text):
    # Lowercase
    text = text.lower()
    # Tokenize
    words = word_tokenize(text)
    # Remove stop words
    words = [word for word in words if word not in stopwords.words('english')]
    # Lemmatize
    lemmatizer = WordNetLemmatizer()
    words = [lemmatizer.lemmatize(word) for word in words]
    return ' '.join(words)

intents = {
    "greeting": ["hello", "hi", "hey"],
    "goodbye": ["bye", "farewell", "see you"],
    "thankyou": ["thanks", "thank you", "thx"]
}

def recognize_intent(text):
    for intent, keywords in intents.items():
        if any(keyword in text for keyword in keywords):
            return intent
    return "unknown"

user_input = "Hello, how are you?"
intent = recognize_intent(preprocess_text(user_input))
print(f"Recognized intent: {intent}")
responses = {
    "greeting": "Hello! How can I assist you today?",
    "goodbye": "Goodbye! Have a great day!",
    "thankyou": "You're welcome! If you have any other questions, feel free to ask."
}

def generate_response(intent):
    return responses.get(intent, "I'm sorry, I don't understand that.")

response = generate_response(intent)
print(f"Bot response: {response}")
from flask import Flask, request, jsonify

app = Flask(__name__)

@app.route('/chat', methods=['POST'])
def chat():
    user_input = request.json.get('message')
    intent = recognize_intent(preprocess_text(user_input))
    response = generate_response(intent)
    return jsonify({'response': response})

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

```