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re

NLU:
f __init__(self):
    self.intent_patterns = {
        "greeting": r"(hello|hi|hey)",
        "product_inquiry": r"(what is|tell me about) (.*)",
        "order_status": r"(check|track) my order (.*)",
        "return_request": r"(return|exchange) (.*)",
        "contact_support": r"(contact|speak to) (support|agent)",
        "farewell": r"(bye|goodbye|thank you)"
    }

f predict_intent(self, user_input):
    for intent, pattern in self.intent_patterns.items():
        if re.search(pattern, user_input, re.IGNORECASE):
            return intent
    return "unknown"

f extract_entities(self, user_input, intent):
    entities = {}
    if intent == "product_inquiry":
        match = re.search(self.intent_patterns["product_inquiry"], user_input, re.IGNORECASE)
        if match:
            entities["product"] = match.group(2).strip()
    elif intent == "order_status":
        match = re.search(self.intent_patterns["order_status"], user_input, re.IGNORECASE)
        if match:
            entities["order_id"] = match.group(2).strip()
    elif intent == "return_request":
        match = re.search(self.intent_patterns["return_request"], user_input, re.IGNORECASE)
        if match:
            entities["item"] = match.group(2).strip()
    return entities

# Example usage:
engine = NLU()
query = "Tell me about your premium headphones"
intent = engine.predict_intent(query)
entities = engine.extract_entities(query, intent)
print(f"Intent: {intent}, Entities: {entities}")

query_2 = "Track my order #12345"
intent_2 = engine.predict_intent(query_2)
entities_2 = engine.extract_entities(query_2, intent_2)
print(f"Intent: {intent_2}, Entities: {entities_2}")

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Intent: product_inquiry, Entities: {'product': 'your premium headphones'}
Intent: order_status, Entities: {'order_id': '#12345'}

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