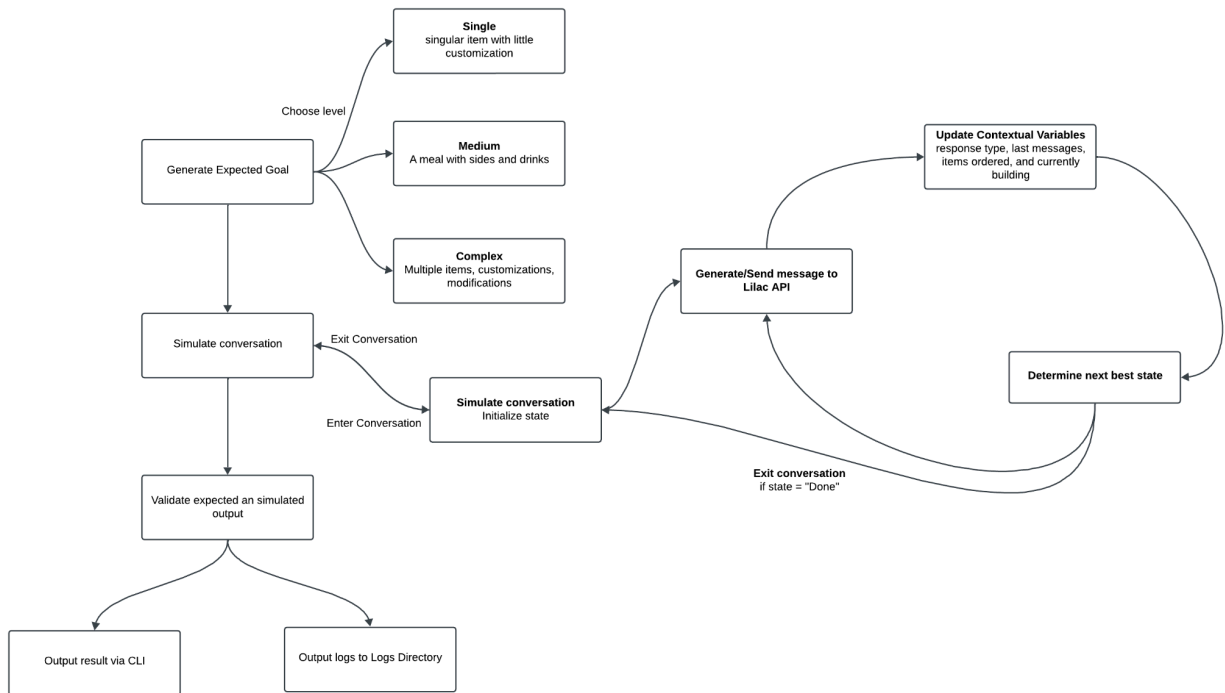


# Conversation Simulator



## High-Level Design:

### 1. System Overview

Simulates realistic customer-employee interactions at a drive-through restaurant. The system uses GPT-4o to generate natural conversations while working to complete specific order goals.

### 2. Core Components

#### 2.1 Main.py

- Generates test orders of varying complexity (simple/medium/complex)
- Can simulate single orders or multiple parallel orders for testing
- Verifies if the final order matches the intended order

## 2.2 Lilac API Client

- Handles API communication with Lilac's service
- Starts new order sessions
- Sends chat messages to an order-taking agent
- Retrieves order status

## 2.3 Order Goal Generator

- Generates random orders with varying complexity levels (simple, medium, complex)
- Handles required and conditional menu options (e.g., "meal option" requires specific sides)
- Manages customizations with modifiers (e.g., "extra cheese", "no onions")
- Enforces menu rules like minimum/maximum selections while keeping orders realistic (limits to 2-3 items for complex orders, max 4 selections per option)

## 2.4 Conversation Orchestrator

### Core Purpose:

- Simulates natural customer conversations at a drive-through restaurant
- Manages the flow of ordering specific items while maintaining realistic dialogue
- Tracks order progress and handles agent interactions

### Key Components:

- Maintains states: GREET, QUESTION, ORDER, CLARIFY, PRE-DONE, DONE
- Uses GPT-4o to determine appropriate state transitions
- Tracks pending questions and ensures they're answered

### Order Tracking System:

- Monitors items being ordered vs. order goals
- Tracks item customizations and modifications
- Verifies order completeness using GPT-4 comparisons
- Maintains conversation context including ordered items, items currently being ordered, and pending questions

### Natural Language Generation:

- Uses GPT-4 to generate contextually appropriate customer responses
- Applies personality traits (emotion, tone, brevity) for realistic variation
- Ensures responses align with order goals while staying conversational
- Breaks down complex orders into natural incremental requests

#### Conversation Analysis:

- Determines if agent messages require responses
- Checks if questions have been adequately answered
- Analyzes when conversations should end
- Tracks item construction through conversation flow

#### 2.5 Menu Management System

- Loads and manages menu data
- Lists all menu items
- Finds specific items by name