Adilib - Library for the development of natural language interaction interfaces

Description

Adilib is a comprehensive software solution for the development of highly versatile conversational assistants and chatbots. Comprising various technological modules, Adilib enables the understanding of information expressed by users in natural language, contextualizes user inputs based on previous interactions and external information, and generates a wide range of responses, whether they are static or dynamic in nature.

Adilib utilizes the concept of attributes to store the dialogue state and manage the rules governing the conversation. Interaction rules are also defined based on attribute values, as well as on the user's and the system's recent interactions. In addition to these technological components, Adilib offers training, deployment, and monitoring functionalities, streamlining both the development of conversational assistants and their usage.

Moreover, Adilib is designed in a modular, scalable manner and can be easily deployed in Linux environments, requiring only Docker and Docker Compose installed for deployment.

Features

The main features of Adilib include the following:

- Privacy: ability to deploy the entire platform on-premise, no need for cloud computing
- Flexibility to create from simple use cases to use cases with hundreds of possible questions and complex flows
- Ability to implement multilingual chatbots capable of adapting to the perceived language
- Possibility of integration with speech recognition and synthesis technology for spoken interaction
- Straightforward integration with dialogue templates that cover multiple use cases and allow easy instantiation of conversational assistants without the need of expert knowledge

Use cases / Applications

Some applications of this technology are:

Healthcare

Assistants for daily life support and health management, offering automated patient questionnaires, hands-free health data input, and timely reminders for tasks like medication and appointments.

Industry

Assisting operators in industrial tasks, including the retrieval of data from knowledge bases, voice-recorded quality checks, and interactions with collaborative robots.
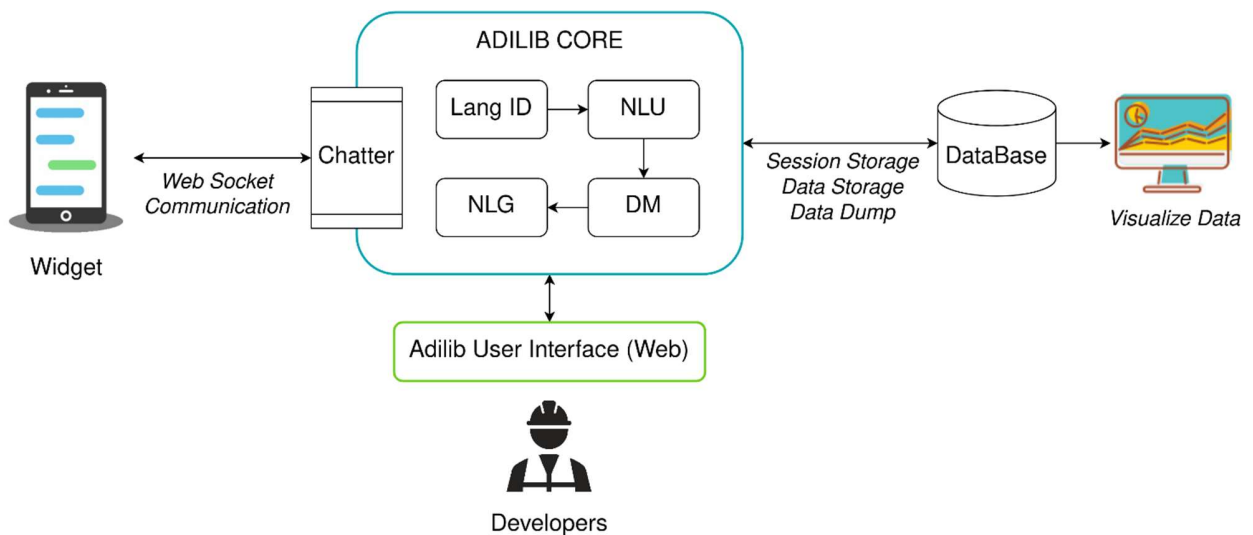
Public administration

Assisting citizens with administrative tasks, answering common questions, and managing citizen feedback.

Personal assistants

Monitoring users' lifestyles, managing agendas and reminders, ensuring personal and secure interactions, and collecting information from dynamic sources such as social events and weather.

Modules & Architecture

The technical architecture of Adilib can be seen in the following figure:

This software library is divided into several modules:

Module	Description	Language	Dependencies	OS
Adilib User Interface	Web graphical user interface that allows the development of conversational assistants	Angular		Ubuntu
Chatter	Component in charge of maintaining dialogues with end-users through channels, by communicating with Adilib Core	Go		
Adilib Core	Component responsible for the training and inference of the following technological modules: • Language Identifier (LangID): service to identify the input language. • Natural Language Understanding (NLU): module in charge of user comprehension. • Dialogue Manager (DM): module that oversees decision making, actively tracks the progress of the dialogue and retains memory of the past interactions within a conversation. • Natural Language Generation (NLG): module that generates responses based on the information received from the DM	Go Python	Rasa	
Database	Persistence of logs and interaction data in a database for visualization and/or analysis purposes	Python	MongoDB Elasticsearch Kibana	
Widget	Web graphical user interface that users can employ to interact with the conversational assistants developed using Adilib.	React	Tensorflow.js	Firefox Chrome