Article

Design and development of chatbot for the BITOO platform

Diseño y desarrollo de chatbot para la plataforma BITOO

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Abstract

The objective is to present the design and development of a chatbot for implementation on the Bitoo platform of the company Softura Solutions S. de R. L., as a tool that allows customers to be served 24/7 to resolve doubts about the use of the platform, the implementation of chat will generate a reduction in time in user support and the minimization of absorption of time invested by Bitoo's Marketing team. For the development of this, tests were carried out on the functionality of the platform, to detect any possible doubts that users had, and thus consider them in the chatbot. Dialogflow, a free licensing tool, was used for the development of the chatbot, as well as the configuration and the appropriate language for dialogues that provide answers to the most common questions that users may have. This project contemplates the use of artificial intelligence areas implemented in Dialogflow, such as: natural language processing and machine learning.

Resumen

El objetivo es presentar el diseño y desarrollo de un chatbot para su implementación en la plataforma Bitoo de la empresa Softura Solutions S. de R. L., como una herramienta que permita atender a los clientes las 24 horas, los 7 días de la semana, para la resolución de dudas del uso de la plataforma, la implementación del chat generará una reducción de tiempo en el soporte a usuarios y la minimización de absorción de tiempo invertido por parte del equipo de Marketing de Bitoo. Para el desarrollo de este, se realizaron pruebas de la funcionalidad de la plataforma, para detectar las posibles dudas que tuvieran los usuarios, y así contemplarlas en el chatbot. Se empleo Dialogflow herramienta de licenciamiento libre para el desarrollo del chatbot, así como la configuración y el lenguaje apropiado para los diálogos que permitan dar respuesta a las preguntas más comunes que puedan tener los usuarios. En este proyecto se contempla el uso de áreas de inteligencia artificial implementadas en Dialogflow, como lo son: procesamiento de lenguaje natural y aprendizaje automático.

Machine learning, Chatbot, Artificial intelligence

Aprendizaje automático, Chatbot, Inteligencia artificial

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Introduction

This article aims to present the design and development of a chatbot for the Bitoo platform, which aims to serve users and customers in an automatic way. In order to increase the number of affiliated businesses and customers who purchase a product or service offered through it.

The implementation of chatbots is currently being developed in most companies that offer services or products is necessary. Therefore, the company Softura Solutions needs to innovate with this technological tool in its platform called Bitoo.

For the development of the project it is necessary to keep in mind that Artificial Intelligence (AI) provides areas of knowledge that are involved and are necessary to apply, such as: machine learning and natural language processing. Specifically for this project, the functionality of the tools available on the market for its development was analysed.

Theoretical framework

Artificial Intelligence, currently applied in many areas, is the core of the fourth technological revolution. In the business sector, AI is used for customer relationship management as applied in automated response systems, i.e. chatbot.

A chatbot is a computer programme that simulates and processes human conversations (either written or spoken), allowing humans to interact with digital devices as if they were communicating with a physical person. Chatbots can be as simple as rudimentary programmes that respond to simple queries with a one-line response or as sophisticated as digital assistants that can learn and evolve to provide increasing levels of personalisation as they gather and process information (Oracle, 2023).

Chatbots are an essential tool in the marketing relationship as many companies apply this function to their website; therefore, the influence of chatbots on the company's integrated marketing communication (IMC) activities has been studied, resulting in impulse buying behaviour and repurchase intention behaviour (Bui Thanh Khoa, 2021).

The current era is lived with information overload. Although the basic principles of marketing will remain the same, to a much greater extent they become individualised and contextualised, allowing companies/brands to convert their current market orientations. The multiplicity of media and related channels imposes the need to process messages as well as stimuli in a constant and uninterrupted way. With this approach, updating related to digital technologies becomes an inherent element of marketing while allowing various market players to come together in an easier and more comprehensive way than ever before (Kaczorowska, 2019).

Chatbots allow companies to interact with an unlimited number of customers on a personal basis and can be scaled up or down according to demand and business needs. By using chatbots, a company can provide proactive, personalised, human-like service to millions of people at the same time (Oracle, 2023).

Chatbots, induced by AI, automatic rules, Natural Language Processing (NLP) and Machine Learning (ML) process data to provide answers to requests of all kinds. There are two types of chatbots which are:

1. Task-oriented (declarative) chatbots, which are single-purpose programs that focus on performing a function. They employ PLN rules and very little ML, generating automated but conversational responses to user queries. Interactions with these conversational bots are very specific and highly structured, making them applicable to support and customer service functions. The chabot guide for the Bitoo platform is based on this type of chatbot.

2. Data-driven and predictive (conversational) chatbots are often referred to as virtual assistants or digital assistants and are much more advanced, interactive and personalised than task-oriented chatbots.

For the creation of chatbots there are several free softwares available on the internet, some of these allow you to configure different services such as: allow you to easily create chatbots to help your team qualify leads, schedule meetings, provide answers to frequently asked technical questions, and much more.

a)   Salesforce LATAM, 2019, defines a lead as a potential customer who has shown interest in a product or service offered by the brand through interaction with content and other materials.

b)   According to the needs and considering the recommendation of one of the company's technology advisors, Dialogflow software was used, which is a natural language understanding platform that facilitates the design of a conversational user interface and its integration to an application for mobile devices, web applications, devices, bots, interactive voice response systems and more. With Dialogflow, you can provide new and engaging ways for users to interact. Dialogflow provides two different virtual agent services, each of which has its own agent type, user interface, API, client libraries and documentation (Google Cloud, 2022).

c)   For this case study Dialogflow ES was used which provides a standard agent type suitable for small and simple agents. The standard agent type it handles is suitable for small to medium and simple to moderately complex agents. The sections described below must be configured:

-   The Intentions which are the goals or actions you want to achieve with the chatbot. This section links each of the intentions with a series of training sentences.

-   The Entities extract important information from the user's interactions, either because the user is providing this information in the first iteration or through questions that are asked.

-   Contexts allow the conversation to be natural and fluid. It is necessary to work with the contexts to transfer information between the different intentions and to make the conversation as natural as possible.

Methodology

The following sections describe the steps that were carried out for the chatbot.

a) The design of the chatbot was elaborated with the Figma tool. Figure 1 shows the main interface of bitoo with a view on a smartphone, and the chatbot button is displayed on the right side in the central part of the interface. Clicking on it presents the chatbot interface (see figure 2). Figure 3 illustrates the interaction with a user.

Figure 1 Chatbot button

b) The Google account is configured, as you must have one to access this tool. Then access the Dialogflow site, select or create the project to be configured (see figure 4).

c) Generate and/or configure the intentions (see figure 5).

Figure 2 Chatbot interface

Figure 3 Interaction with the chatbot
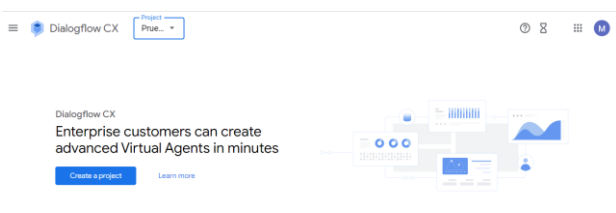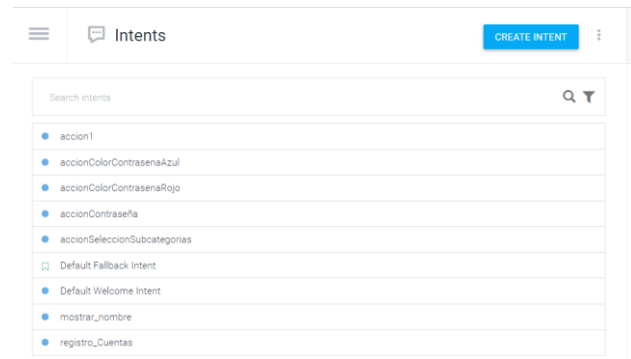

Figure 4 Dialogflow interface

Figure 5 Intents Interface

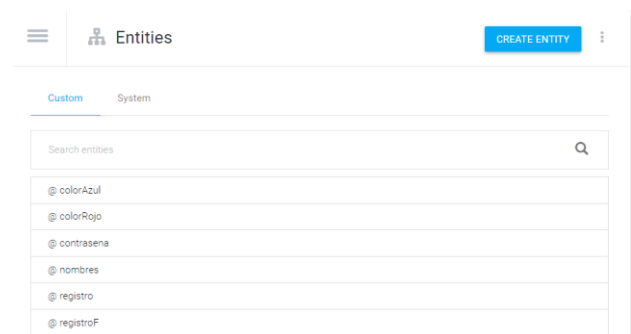d)   Entities are generated and configured (see figure 6).

Figure 6 Entity Interface

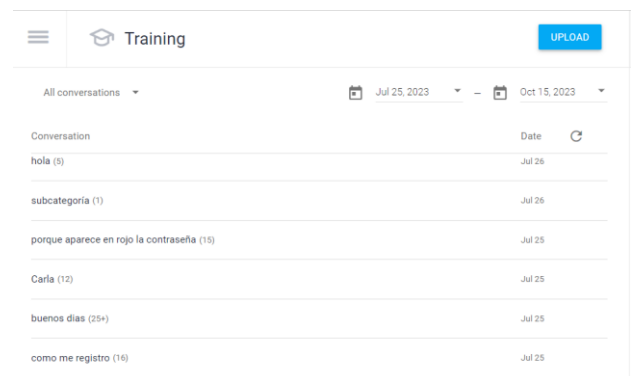e)   Contexts are created and/or configured (see figure 7 and 8).
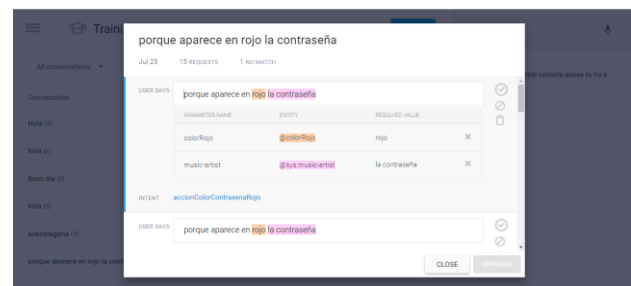

Figure 7 Contexts Interface

Figure 8 Context Configuration.

Results

Firstly, the Bitoo platform was explored to identify the information process in the different sections, with the aim of contemplating in the chatbot functionalities in which the user could have doubts or not have the knowledge of what action to perform. Because even if the company trains the user in the use of the platform or provides a user manual, when the user is confronted with the use of the platform alone, without the support of an expert in its use, doubts always arise or the dialogues are not the right ones to reduce the questions that the user may have. On the other hand, as users it is difficult to make use of a user manual, so the doubts were identified and considered for inclusion in the chatbot.

We tested the logical sequence of the answers given by the chatbot, and that they cover the coherent functionality. Figure 9 illustrates a sequence of how the customer interacts with the chatbot.

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Conclusions

Digital marketing is a trend with too much boom in daily life, so it is important to take care of the aspects of customer service, so the integration of a chatbot on a platform like Bitoo serves to support users of this.

Since it supports them with possible doubts that may arise when interacting with this, and provide real-time attention, it results in ensuring the use of the platform correctly and therefore increases the percentage of partners, customers and sales for the company Softura Solutions S. de R. L.

The Dialogflow tool that was used is free license and has more services that could be contemplated to have a complete kit of services that can offer to the clients of the company in an appropriate way.
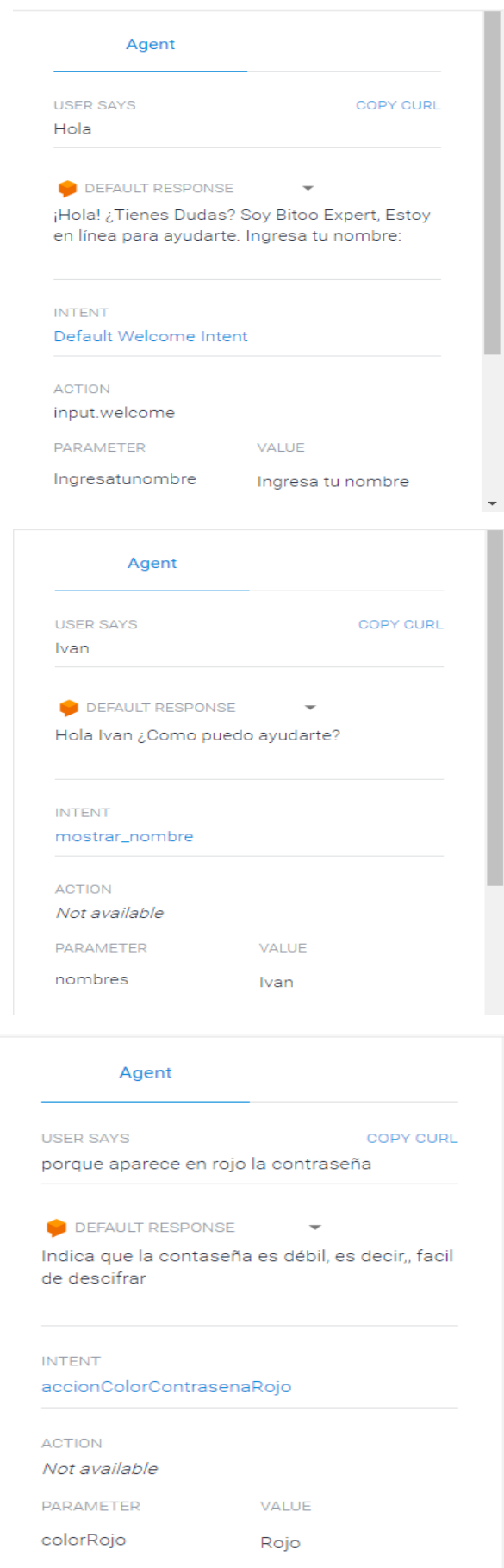
Annexes

Figure 9 Interaction with a user

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