Chatbot for a tickets seller system

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Abstract—That paper, give an explication about the method used for apply a chatbot in a tickets seller, making use of chatbots previously trained, through LLM's and a series of plain text about frecuent questions about the bought of tickects for some events.

Index Terms—LLM, entropy, chatbot, synergy, holism, chaos theory

I. Introduction

In recent years, the use of chatbots has gained great relevance in various industries due to their ability to streamline processes and improve customer experiences. One area where chatbots have shown promise is in ticket sales, providing instant answers to common questions and improving user interaction.

This article explores the application of a chatbot within a ticketing platform, leveraging large language models (LLM) to improve user satisfaction. By utilizing pre-trained LLMs and ticket purchasing FAQs, we aim to create an intelligent system that can handle user queries more effectively, minimizing human intervention and maximizing efficiency. The project draws on concepts from chaos theory, entropy, holism and synergy to understand and optimize chatbot interactions. Through this interdisciplinary approach, we aim to demonstrate how seemingly complex systems, such as natural language understanding, can be optimized to improve the user experience.

II. Theoretical framework

Before explaning a complete plane of the problematic, its necessary see some concepts that it's used in the final product.

A. LLM

According to IMB "Large language models (LLMs) are a category of basic models trained on immense amounts of data, making them capable of understanding and generating natural language and other types of content to perform a wide variety of tasks"[2].

B. (Lenguaje de programacion usado)

LENGUAJE DE PROGRAMACACION USADO

C. Chaos theory

Chaos theory studies how minimal changes in the initial conditions of a system can make it unpredictable. A system that is very sensitive to such variations in initial conditions will be called a chaotic system. In the long term and despite having randomness and disorder, patterns will begin to emerge. [4]

D. Entropy

The entropy it´s a grade present of desorder and chaos in a system model that give to them a routing to wear.

"Originally the word entropy comes from the Greek em which means about, in and near; and sqopg which means turn, alternative, change and evolution. This term was first used in 1850 by the German physicist Rudolf Julius Emmanuel Clausius".[1]

this stablish how the possiblites are random and inherits in the universe, making a system desorder add complexity for the system.

E. Holism

A holistic system will be managed under an approach that considers the interactions of the parts as a whole, understanding that an impact in one part can affect the others due to their relationships.

F. Synergy

The systems, in a general form, are synergics, while him parts, isolated, can't explaining him behaviors, in such a way that, the synergy it's the result of interactions between the parts or components of a system,[3]

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III. Methodology

To implement the chatbot, the methodology involves several steps that leverage large language models (LLMs) and a comprehensive dataset of ticket purchasing FAQs. The main phases of the methodology are:

Data Collection: We compiled a data set of plain text FAQs commonly asked in ticketing environments. These include questions about ticket availability, pricing, event details, and refund policies.

Model training and fitting: Using a pre-trained LLM, we fit the model with the selected data set. The training focused on the chatbot's ability to generate natural and contextually appropriate responses to customer queries.

System design: The chatbot system was integrated with the ticketing platform, designed to handle real-time interactions. The chatbot processes user queries, retrieves

relevant information from the data set, and provides accurate responses.

Evaluation and testing: To evaluate the effectiveness of the chatbot, we conduct tests with users. These tests measured accuracy, response time, and user satisfaction. The feedback was used to further refine the system.

Using principles from chaos and entropy theory, we addressed the randomness and complexity inherent in user interactions, while holism and synergy guided the chatbot's interactions across the system to improve its overall performance.

References

[1] Carmona Collado (Auth.) *Fractal attraction*. Accedido: 2 septiembre 2024. 2003. URL: https://catarina.udlap.mx/u_dl_a/tales/documentos/lap/carmona_c_dc/.

[2] IBM. *Large Lenguage Models*. Accedido: 30 agosto 2024. URL: https://www.ibm.com/mx-es/topics/large-language-models.

[3] Francisco Osorio (Auth.) Marcelo Arnold. *Introducción a los conceptos básicos de la teoría general de sistemas*. Accedido: 15 septiembre 2024. 1998. URL: https://www.moebio.uchile.cl/03/frprinci.html#:~:text=La%20sinergia%20es%2C%20en%20consecuencia,la%20suma%20de%20sus%20partes%22..

[4] Carlos Serrano. *Qué son la Teoría del caos y el Efecto mariposa (y cómo nos ayudan a entender mejor el universo)*. 2021. URL: https://www.bbc.com/mundo/noticias-59525600.