PROJECT TITLE

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Abstract:

This study describes the creation and assessment of an AI Generative Chatbot using a wide range of cutting-edge tools, including Gradin for data management, PlayHT for text-to-speech synthesis, Google Colab for cloud computing, OpenAI for natural language understanding, LangChain for conversation flow control, and Hugging Face for model optimization. The chatbot's goal is to engage users in lively, context-sensitive conversations while providing insightful responses. Its conversational potential, user satisfaction, and potential applications across various domains are all evaluated in the study. A cost analysis is also carried out to determine whether implementing this AI Generative Chatbot stack would be economically feasible. The outcomes show its potency, adaptability, and affordability, opening the door for revolutionary uses in customer service, virtual assistants, and other fields.

Introduction:

Conversational agents that are powered by AI have become more popular recently across many industries. The AI Generative Chatbot described in this paper combines cutting-edge technologies, such as Google Colab's computational power, OpenAI's language understanding, LangChain's conversation management, Gradin's data handling, PlayHT's voice synthesis, and Hugging Face's model fine-tuning. The chatbot is made to offer responsiveness that is dynamic and contextually appropriate, providing a flexible method for human-computer interactions.

Design:

Modularity and scalability were taken into consideration when creating the chatbot stack. Cloud-based computing resources are available for training and inference through Google Colab. For natural language understanding, OpenAI's GPT-based models are integrated. Context management and conversation flow are handled by LangChain. Gradin is used to store and retrieve data. For voice interactions, PlayHT provides text-to-speech synthesis, and Hugging Face models allow for fine-tuning for particular tasks.

Methodology:

A user study is conducted with participants conversing with the chatbot to evaluate the chatbot's performance. Data is gathered and analyzed in terms of metrics like response quality, contextual comprehension, and user satisfaction. The effectiveness of the chatbot in real-world settings, including customer service and virtual assistance, is also assessed.

Results and Discussion:

The findings show that the AI Generative Chatbot stack can interact with users successfully, showing a high level of contextual understanding and producing responses that are coherent and aware of their surroundings. Users praise the chatbot's conversational abilities and point to its potential uses in customer service, virtual assistants, and other areas. These technologies work together to create a powerful and flexible conversational agent.

Outcome/Scope:

An innovative approach to automating and improving conversational interactions across various domains is provided by the AI Generative Chatbot stack. Its flexibility, awareness of the context, and capacity to produce contextually appropriate responses open doors to creative applications that enhance user experiences.

Cost Analysis:

When compared to conventional human-driven support systems, the cost analysis shows that implementing the AI Generative Chatbot stack can result in significant cost savings. Even though there are startup and ongoing costs, the stack's scalability and efficiency over time make it a cost-effective solution. The stack can also manage numerous inquiries at once, which lowers operational costs in customer support and related fields.

References:

Hugging face https://huggingface.co/spaces/Janany/GradiolangchainChatBotOpenAI