Sentiment Analysis in Chatbot-Based Systems

Abstract:

Enhancing User Experience of chatbot through Artificial Intelligence

Introduction/Background:

Chatbots powered by artificial intelligence (AI) are increasingly used in customer service, healthcare, and education. Their ability to interact with users relies heavily on understanding the sentiment behind messages. Accurately detecting user sentiments can lead to more empathetic conversations and improved outcomes. However, the effectiveness and accuracy of sentiment analysis in real-time chatbot communications remains under-explored.

Research Question/Hypothesis:

Can advanced AI-based sentiment analysis significantly improve chatbot responses and user satisfaction compared to rule-based systems?

Objectives:

- Measure the accuracy of state-of-the-art AI models in detecting sentiment in chatbot interactions.
- Compare user satisfaction and engagement levels between AI-driven and traditional rule-based chatbot responses.
- Identify common challenges in applying sentiment analysis to real-time chatbot conversations.

Methods/Approach:

The study will collect anonymized conversation logs from a live chatbot platform. Sentiment will be analysed using deep learning models such as BERT and LSTM, alongside rule-based approaches. Quantitative analysis will compare model accuracy and user engagement metrics. Qualitative feedback will be gathered from users to assess conversational experience.

Expected Outcomes:

This research expects to show that AI-driven sentiment analysis enhances chatbot responsiveness and user satisfaction. Insights may contribute to best practices for integrating sentiment analysis into conversational AI systems.

References (optional):

Huang, T., et al. (2020). Learning Sentiment in Conversation: Using Transformer-based Models for Sentiment Analysis in Chatbots.

Zhang, J., & Wang, H. (2018). Deep Learning for Chatbots and Conversational AI: Sentiment Analysis Methods.