



Emotion-Based Message Formatting System Using Machine Learning

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Abstract—

In digital communication, the emotional tone of text is often lost, leading to misunderstandings and misinterpretations. The Emotion-Based Message Formatting System addresses this issue using Machine Learning (ML) and Natural Language Processing (NLP). The system automatically detects the emotional intent behind a user's message and dynamically reformats it to express the emotion more clearly. It identifies emotions such as happiness, sadness, anger, and neutrality, then applies styling and tone adjustments accordingly. This application enhances digital interaction by improving clarity and empathy in text-based communication. The prototype demonstrates that automatic emotion detection, when combined with intelligent formatting, significantly reduces emotional confusion in messaging platforms, making communication more expressive and context-aware.

Keywords— Emotion detection, message formatting, natural language processing, text analysis, artificial intelligence.



I. INTRODUCTION

The growing reliance on digital communication platforms such as social media and instant messaging has replaced traditional face-to-face interaction. While this provides convenience, it also eliminates key emotional cues like tone, facial expression, and gesture. This often leads to messages being misunderstood. For example, a phrase like “Okay.” can be interpreted as neutral, annoyed, or dismissive, depending on the reader’s perspective. To overcome this, the proposed Emotion-Based Message Formatting System uses machine learning to analyse text and apply emotional context in real-time. By integrating NLP algorithms, the system detects emotions and automatically adjusts message structure, punctuation, or tone. The result is a clearer, emotionally aligned interaction. The project bridges technology and psychology, fostering better understanding in digital communication.

II. LITERATURE REVIEW

Existing platforms such as WhatsApp, Telegram, and Messenger provide textual communication but depend on users to manually add emojis or reactions. Past research in sentiment analysis has focused on polarity detection (positive, negative, neutral), but this is insufficient for nuanced emotion recognition. Advanced emotion detection models use deep learning to identify emotional categories, yet they often lack direct integration with user messaging interfaces. Tools like VADER and BERT have been effective for sentiment-level analysis of social media data but are not optimized for real-time applications that modify message styles. Moreover, conversational AI and chatbots focus on response generation rather than emotional clarity. The proposed system integrates emotion detection directly into message formatting, providing a novel layer of emotional intelligence in personal and professional communication contexts.

III. METHODOLOGY

The proposed system follows a modular, machine learning–driven architecture that processes text and reformats it based on emotion detection. The workflow includes five major modules:

- User Input Module – Accepts text messages or scenarios through a user-friendly interface.
- Text Preprocessing Module – Cleans and tokenizes the text for analysis.
- Emotion Detection Module – Uses an NLP model (Hugging Face transformer) to categorize emotional tone.
- Message Formatting Module – Applies stylistic changes such as tone softening, emojis, or polite phrasing.
- Output Display Module – Presents the emotion-enhanced message to the user.

Technical Stack:

Backend: Python (FastAPI), Transformers Library
Frontend: React, JavaScript, HTML, CSS

Model: Pre-trained NLP emotion detection transformer.

This systematic processing ensures real-time output and high accuracy in emotion recognition while maintaining user-friendly interaction.

V. CONCLUSION

The Emotion-Based Message Formatting System highlights how artificial intelligence can transform digital communication. By integrating NLP and ML, it identifies emotions and adapts textual expression to convey them effectively. The project successfully demonstrates that emotion-aware formatting assists users in expressing tone and intent accurately, minimizing conflict and confusion. The system’s modular design, scalability, and real-time feedback make it suitable for integration into existing messaging applications.



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REFERENCES

1. Devlin, J., Chang, M., Lee, K., & Toutanova, K. (2019). BERT: Pre-training of Deep Bidirectional Transformers for Language Understanding. NAACL-HLT.
2. Bird, S., Klein, E., & Loper, E. (2009). Natural Language Processing with Python. O'Reilly Media.
3. Liu, B. (2012). Sentiment Analysis and Opinion Mining. Morgan & Claypool Publishers.
4. Hutto, C., & Gilbert, E. (2014). VADER: A Parsimonious Rule-Based Model for Sentiment Analysis of Social Media Text. AAAI Proceedings.
5. Hugging Face NLP Platform – Text emotion recognition API documentation (2024).