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Real-Time Message Sentiment Augmentation by Emoji Symbols

Gregory Savage

Alex Yung

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A participant of a virtual chat can send, to other participants of the virtual chat, messages that include text and/or emojis. For example, the participant can augment the text of the message by appending one or more emojis that reflect the sentiment of the message. Other participants of the virtual chat can interpret the emojis to discern the author's sentiment towards the content of the message. However, manually selecting emojis that reflect the participant's sentiment poses challenges, such as accurately recreating visual cues, tones, emphases, pauses (collectively referred as communication signals) that the participant exhibited in reaction to the messages in the virtual chat and/or when drafting the message. Therefore, manually selecting the emojis can be cumbersome and thus some users may prefer not to use them.

Aspects of the present disclosure address the above-noted and other deficiencies by implementing real-time message sentiment augmentation by emojis. A virtual chat platform can employ an artificial intelligence (AI) model to analyze the context of messages that are exchanged by the virtual chat participants.

In an illustrative example, for each message in the virtual chat, the AI model can identify the sentiment exhibited by the participant who authored the message. In some instances, the AI model can identify the sentiment exhibited by the participant based on, for example, previous messages that the participant shared in the virtual chat and the emojis associated with the previous messages. Additionally, in some instances, the AI model can identify the sentiment exhibited by the participant based on the learned behavior of the participant. The AI model can identify emojis that reflect the identified participant sentiment. Each message that is sent in a virtual chat can be accompanied by an AI model-generated emoji that reflects the presumed author's sentiment towards the content of the message. The emoji can be displayed in a visual association with the message-originating user's avatar, thus providing a visual cue to supplement the emotion of the message.

In another illustrative example, given the message history in a virtual chat, the AI model can identify an emoji that reflects the presumed audience reaction to the latest message in the virtual chat. The emoji can be displayed in a visual association with a chat bar. The emoji can remain in a visual association with the chat bar until a new message is shared in the virtual chat. The emoji can change based on the latest message in the virtual chat.

In some instances, the AI model may include a large language model (LLM) that processes one or more messages and identifies the user's emotions towards the messages. In some implementations, the AI model may be fine-tuned based on processing a corpus of messages and learning from human feedback.

In some instances, the participants of the virtual chat can react to messages that are shared in the virtual chat. A participant can interact with buttons on a message that, when selected, indicate a specific sentiment toward the message. The buttons can be located on each message in the virtual chat, thereby enabling the participant to share a sentiment toward a specific message by activating a button associated with the message. For example, a button, when selected, can indicate that the participant agrees (or disagrees) with the content and/or sentiment of the message. The buttons enable a participant to share a reaction and/or sentiment toward messages drafted by authors other than the participant. As such, the buttons differ from the described emojis since the described emojis can, in some instances, capture the presumed sentiment associated with the author of the message and/or capture the audience's presumed reaction toward the latest message in the virtual chat.

The LLM can consider a participant's reaction toward messages that were composed by other virtual chat participants to determine the participant's individual sentiment toward the conversation.

FIG. 1 illustrates an example computing system 100 for implementing real-time message sentiment augmentation by emojis. Client device 110 can be used to generate a message (e.g., a textual message), referred to as input 111. The message can be transmitted, via network 120, to virtual chat platform 130. The textual message can be provided for display to the participants of the virtual chat 160. The message can be provided as input to an artificial intelligence (AI) model 140. In an illustrative example, the AI model 140 can be a large language model (LLM).

For each message that is shared in the virtual chat 160, the AI model 140 can determine the presumed sentiment of the author towards the content of the message drafted by the author. The AI model 140 can select an emoji that reflects the presumed sentiment of the author. The emoji selected by the AI model 140 can be displayed in a visual association with the message in the virtual chat 160, e.g., virtual chats 200, 300 of FIGS. 2, 3 provide examples of emojis that are displayed in visual associations with virtual chat messages.

The AI model 140 can also determine the presumed reaction of the audience to the latest message in the virtual chat 160. The AI model 140 can identify an emoji that captures the presumed reaction of the audience to the latest message. The AI model 140 can display the emoji within the virtual chat 160.

The AI model 140 can include one or more of decision trees, random forests, support vector machines, or other types of AI models. In some instances, such AI models may include one or more artificial neural networks (also referred to simply as a neural network). The artificial neural network can include a feature representation component with a classifier or regression layers that map features to a target output space. The artificial neural network may be, for example, a convolutional neural network (CNN) that can include a feature representation component with a classifier or regression layers that map features to a target output space, and can host multiple layers of convolutional filters. Pooling can be performed, and non-linearities may be addressed, at lower layers, on top of which a multi-layer perceptron can be commonly appended, mapping top layer features extracted by the convolutional layers to decisions (e.g., classification outputs). The neural network may further be a deep network with multiple hidden layers or a shallow network with zero or a few (e.g., 1-2) hidden layers. Deep learning may use a cascade of multiple layers of nonlinear processing units for feature extraction and transformation. Each successive layer can use the output from the previous layer as input. In deep learning, each level learns to transform its input data into a slightly more abstract and composite representation.

In some embodiments, the AI model 140 can include at least one generative AI model, such as a large language model (LLM) allowing for the generation of new and original content. A generative AI model can deviate from a machine learning model based on the generative AI model's ability to generate new, original data, rather than making predictions based on existing data patterns. A generative AI model may include a generative adversarial network (GAN), a variational autoencoder (VAE), a large language model (LLM), or a diffusion model. In some instances, a generative AI model can employ a different approach to training or learning the underlying probability distribution of training data, compared to some machine learning models. For instance, a GAN can include a generator network and a discriminator network. The generator network attempts to produce synthetic data samples that are indistinguishable from real data, while the discriminator network seeks to correctly classify between real and fake samples.

Through this iterative adversarial process, the generator network can gradually improve its ability to generate increasingly realistic and diverse data.

FIG. 2 illustrates an example virtual chat 200 depicting emojis that capture the sentiment of each participant. Virtual chat 200 depicts a conversation between participants A and B. The emoji that is visually associated with each participant's identifier (e.g., "A," "B") can represent the presumed sentiment of the participant as it pertains to the respective message. The series of emojis that are visually depicted beneath a message can provide a visual representation of the content of the respective message.

FIG. 3 illustrates an example of virtual chat 300 depicting emojis that capture the sentiment of each participant and the audience reaction to the latest message in the virtual chat. Virtual chat 300 depicts a conversation between participants G, J, and M. The emoji that is visually associated with each participant (e.g., located near each participant's name and/or icon) reflects the presumed sentiment of the participant. The group of emojis that are visually depicted beneath the last message of virtual chat 300 represent the presumed audience reaction to the latest message. As new messages are shared in the virtual chat 300, the group of emojis can be removed from display in the virtual chat 300. A new group of emojis that capture the presumed audience reaction to the latest message can be visually depicted in association with the latest message.

Abstract

Aspects of the disclosure are directed to real-time message sentiment augmentation by emojis. A large language model (LLM) can determine, for each message that is shared in a virtual chat, a presumed sentiment of an author of a message and a presumed audience reaction toward the latest message in the virtual chat. The LLM can identify an emoji that captures the presumed sentiment of the author. The LLM-identified emoji can be visually associated with an icon/avatar that corresponds to the author. The LLM can identify emojis that capture the presumed audience reaction toward the latest message in the virtual chat. The LLM-identified emojis can be visually associated with the latest message in the virtual chat.

Keywords: virtual chat platform, group chat, virtual chat, emoji, sentiment, sentiment detection, presumed sentiment, presumed audience reaction, large language model (LLM)

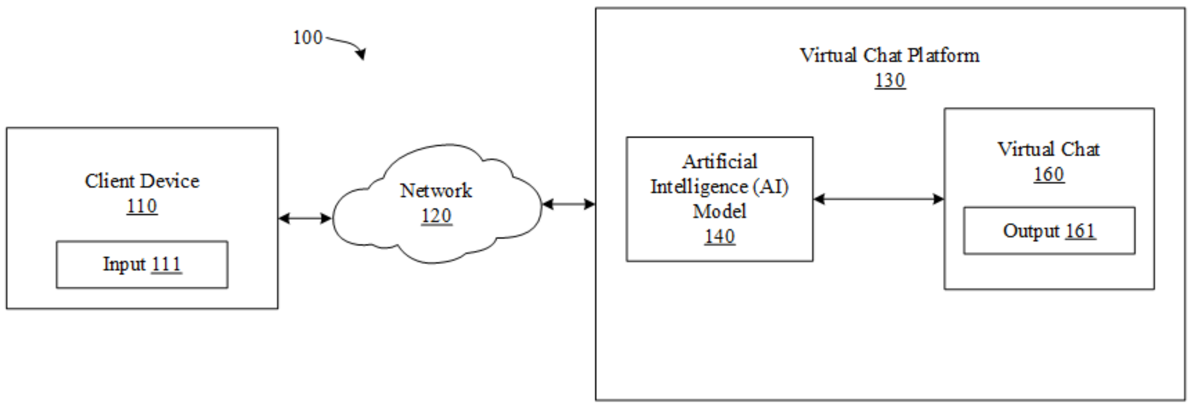
100
Virtual Chat Platform
130
Client Device
110
Input 111
Network
120
Artificial
Intelligence (AI)
Model
140
Virtual Chat
160
Output 161

FIG. 1


200
A 😯: Excuse me, I couldn't help but notice this piece. The colors and shapes are so unexpected.
🎨✨😍
B 🤔: Yes, it's definitely eye-catching. It forces you to question what you think art is supposed to be.
🤯🤔🎨
A 💡: Exactly. It challenges traditional notions of art.
👍💡🎭
B 💡: And it sparks conversations about creativity and the boundaries of art.
🎨💡💥
A 🤔: It's thought-provoking. It makes you really think about how you perceive the world.
🤔🤔🤔
B 💡: I couldn't agree more. Art should make you think and feel.
🤔💭💓
A 💡: It's like the artist is inviting you to see the world from a different perspective.
🎨🌎👁
B 🎨: That's a great way to put it. Art is a way to connect with others and understand our place in the world.
🎨🌍🤝

FIG. 2

300

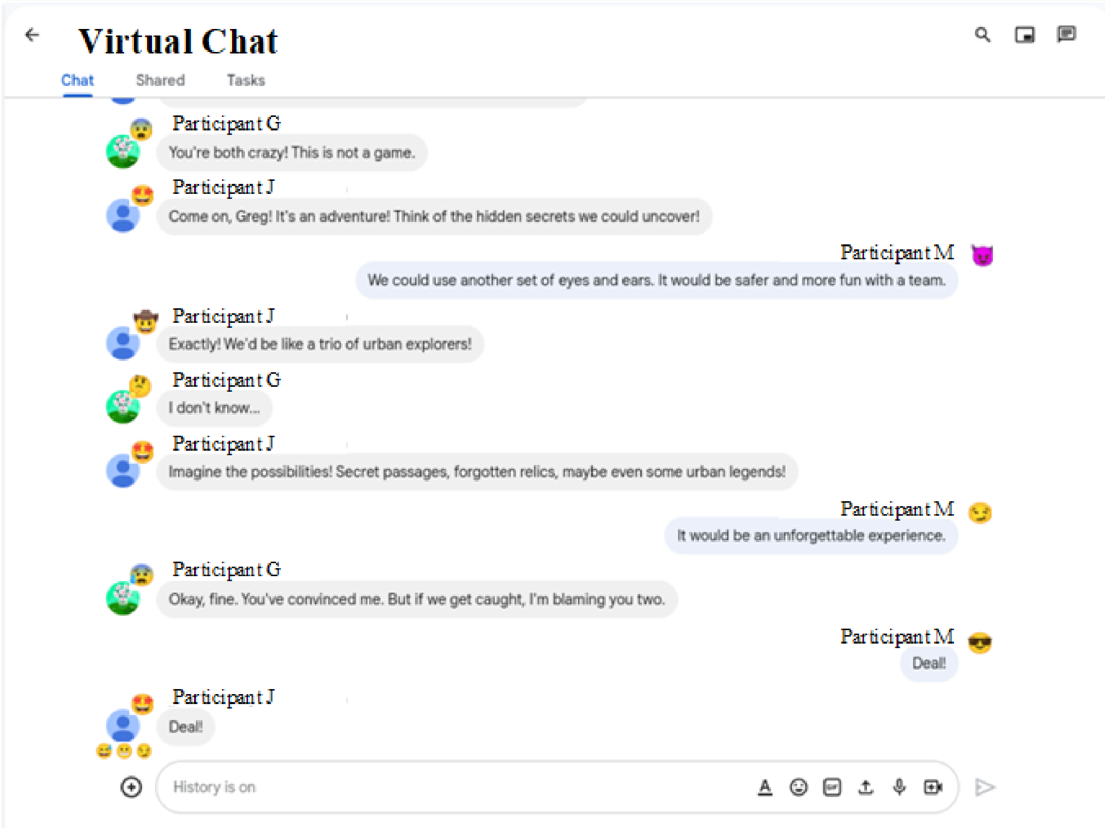
Virtual Chat
Chat
Shared
Tasks
Participant G
You're both crazy! This is not a game.
Participant J
Come on, Greg! It's an adventure! Think of the hidden secrets we could uncover!
Participant M
We could use another set of eyes and ears. It would be safer and more fun with a team.
Participant J
Exactly! We'd be like a trio of urban explorers!
Participant G
I don't know...
Participant J
Imagine the possibilities! Secret passages, forgotten relics, maybe even some urban legends!
Participant M
It would be an unforgettable experience.
Participant G
Okay, fine. You've convinced me. But if we get caught, I'm blaming you two.
Participant M
Deal!
Participant J
Deal!
History is on

FIG. 3