

Analyzing Emotional Responses in Human vs Chatbot Interactions using Parrot Theory

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Abstract. The integration of AI and natural language processing technologies has led to the development of chatbots, which offer sophisticated conversational experiences with users. The effectiveness of chatbots in providing emotional support and empathy to users is a topic of debate, with some studies suggesting that chatbots can provide emotional support to users, while others have indicated that chatbots may lack the ability to understand and respond appropriately to human emotions. This study aims to analyze emotional responses in human vs chatbot interactions using Parrot Theory, which classifies emotions into three groups or levels named as primary, secondary, and tertiary. The data collection process consists of two stages: a literature review and a dataset of human responses and chatbot responses to queries that the researcher has made. The dataset of human responses from 35 participants aged 18-34, with a distribution of 35%, 18-20; 65.7%, 21-29; and 2.9%, 30-34. The gender distribution comprises 25.7% male and 74.3% female respondents. The data analysis involves content analysis and comparison of human and chatbot responses. By annotating the collected data with emotional labels based on Parrot Theory, researchers can identify patterns and differences in emotional expressions between humans and chatbots. The findings indicate that chatbots and humans produce different types of emotions in responding to situations, with human responses often including personal touches, cultural references, and varied language complexity, while chatbot responses are more structured and formal. The reasons for these differences include the level of personalization, cultural references, language complexity, and the ability to express emotions.

Keywords: Chatbot, Emotions, Parrot Theory, Human Responses

Introduction

The integration of AI and natural language processing technologies into various facets of our daily lives has led to the development of chatbots, which offer sophisticated conversational experiences with users. Chatbots, powered by advanced language models like GPT-3, have found application in various fields, including customer support, education, and entertainment. The effectiveness of chatbots in providing emotional support and empathy to users is a topic of debate, with some studies suggesting that chatbots can provide emotional support to users, while others have indicated that chatbots may lack the ability to understand and respond appropriately to human emotions.

Emotions are a crucial aspect of human communication and daily life. They are conscious mental reactions that are subjectively experienced as strong feelings directed towards a specific object and typically accompanied by physiological and behavioral changes in the body. Emotions are motivational and informational, primarily by virtue of their experiential or feeling component. There are many theories explaining our emotional experience, and one of them is Parrott's theory of emotions, proposed in 2001, classifies emotions into different groups and levels based on their intensities and dependencies. The theory provides a framework for understanding and analyzing the complex characteristics of emotions in written text. Parrott's theory includes six primary emotions: love, joy, surprise, anger, sadness, and fear. These primary emotions are further divided into secondary and tertiary emotions, creating a comprehensive classification system.

AI Chatbot

AI Chatbots are becoming increasingly prevalent in various domains, including customer service, healthcare, and marketing communication. As the industry is projected to grow to \$100 billion by 2024 and \$200 billion by 2026, according to market research from Global Industry Analysts and Reports and Data, impactful research is needed in emotional AI technologies. The growing importance of human-computer interaction in contemporary society is also evident in the increasing use of chatbots. AI chatbots are computer programs that simulate human interactions using machine learning and natural language processing (NLP) to understand speech and generate human-like replies. NLP is a branch of AI that focuses on the interaction between computers and humans through natural language. Chatbots use advanced algorithms to understand natural language and respond with contextually appropriate answers. From customer service to healthcare, chatbots are changing how we interact with technology and making our lives easier. NLP-powered chatbots allow people to communicate with computers in a way that feels natural and human-like, mimicking person-to-person conversations. These chatbots have a wide range of applications in the customer support sphere, including resolving customer issues, generating content, and providing recommendations. As NLP technology advances, we expect to see even more sophisticated chatbots that can converse with us like humans.

ChatGPT 3.5

ChatGPT is a unique AI chatbot that uses natural language processing to create human-like conversational dialogue and generate written content. Compared to other AI chatbots, ChatGPT is a generative AI tool that can answer almost any question in any category, making it less specialized in any one topic but appealing to a larger audience. Other AI chatbots, such as rule-based chatbots and intent-based chatbots, rely on pre-defined templates and training datasets to select the most appropriate response. ChatGPT's features include instant responses, multilingual support, and personalization based on user preferences and behaviors. ChatGPT, part of the GPT-3.5 series, is a large language model-based chatbot developed by OpenAI, designed to enable users to refine and steer conversations towards desired lengths, formats, styles, levels of detail, and languages.

Emotions in Communication

The role of emotions in communication is crucial, influencing how messages are conveyed and interpreted. Emotional awareness is essential for effective communication, enabling individuals to understand their own feelings and those of others, leading to improved interactions and relationships. When individuals communicate their emotions, they provide valuable information to others, informing how they should react and enabling them to offer support when needed. Emotions can be conveyed through both verbal and nonverbal communication, with body language and facial expressions playing a significant role in expressing emotions and building trust. It is important to note that emotions can impact communication positively or negatively, depending on how they are managed. Excessive intensity of emotions can lead to debilitating emotions, affecting the ability to interpret emotions and causing conflict. Therefore, understanding and effectively managing emotions is crucial for successful communication. Overall, emotional awareness and the ability to express and interpret emotions are vital components of effective communication, contributing to the development of trust, authenticity, and strong relationships.

Parrot's Emotions Theory

Parrot's theory of emotions classifies emotions into three groups or levels: primary, secondary, and tertiary. Primary emotions include anger, anticipation, joy, trust, fear, surprise, sadness, and disgust. The theory provides a framework for understanding and analyzing emotions in written text, allowing for the classification and intensity assessment of emotions based on different levels. Additionally, the theory has been mentioned in the context of human behavior, suggesting that humans predominantly parrot what they hear or read, understanding and thinking deeply about only a small fraction of their knowledge landscape. Furthermore, the intelligence and social behavior of parrots have led to the suggestion that they may have a "Theory of Mind," which involves the ability to attribute mental states to oneself and others, including beliefs, desires, intentions, and emotions. This theory has also been applied in the context of categorizing developers' comments into six emotions: love, joy, surprise, anger, sadness, and fear.

Methods

This study is a qualitative research design that aims to analyze emotions in chatbot responses compared to human responses using Parrot Theory to categorize them into distinct groups. The classification of emotions according to Parrot Theory can be used to analyze emotional responses in human vs chatbot interactions. By annotating the collected data with emotional labels based on Parrot Theory, researchers can identify patterns and differences in emotional expressions between humans and chatbots.

TABLE 1. Parrot Emotion Framework

Primary emotions	Secondary emotions	Tertiary emotions
love	Affection	Compassion, Sentimentality, Liking, Caring, ...
	Lust/Sexual desire	Desire, Passion, Infatuation
	Longing	
Joy	Cheerfulness	Amusement, Enjoyment, Happiness, Satisfaction, ...
	Zest	Enthusiasm, Zeal, Excitement, Thrill, Exhilaration
	Contentment	Pleasure
	Optimism	Eagerness, Hope
	Pride	Triumph
	Enthrallment	Enthrallment, Rapture
Surprise	Surprise	Amazement, Astonishment
	Irritability	Aggravation, Agitation, Annoyance, Grumpy, ...
	Exasperation	Frustration
Anger	Rage	Outrage, Fury, Hostility, Bitter, Hatred, Dislike, ...
	Disgust	Revulsion, Contempt, Loathing
	Envy	Jealousy
	Torment	Torment
	Suffering	Agony, Anguish, Hurt
Sadness	Sadness	Depression, Despair, Unhappy, Grief, Melancholy, ...
	Disappointment	Dismay, Displeasure
	Shame	Guilt, Regret, Remorse
	Neglect	Embarrassment, Humiliation, Insecurity, Insult, ...
	Sympathy	Pity, Sympathy
Fear	Horror	Alarm, Shock, Fright, Horror, Panic, Hysteria, ...
	Nervousness	Suspense, Uneasiness, Worry, Distress, Dread, ...

The data collection process consists of two stages. In stage 1, a literature review will be conducted to identify relevant studies and theories related to analyzing emotions in chatbot responses compared to human responses. The second step is to collect a dataset of human responses and chatbot responses to stimulus that researcher has made. This dataset of human will be collected from a form. The research subject dataset of interactions of human and chatbot responses, with the object being the identification and comparison of emotions produced by chatbots and humans in different situations. The dataset of human responses includes responses from 35 respondents aged 18-34, with a distribution of 35%, 18-20; 65.7%, 21-29; and 2.9%, 30-34. The gender distribution comprises 25.7% male and 74.3% female respondents. The data analysis involves content analysis and comparison of human and chatbot responses to specific emotional scenarios, such as love, joy, surprise, anger, sadness, and fear.

Results

Types of Emotion Produced by Chatbot and Human in Responding Love emotions

In this element, the situation involves someone celebrating her birthday and receiving a surprise virtual meeting with old friends arranged by her partner. The common element in both responses is "Affection," with expressions of joy and happiness emphasizing the positive aspects of the surprise. Human responses recognize the partner's effort, wish for lasting happiness, and include teasing or playfully noting someone being in a romantic mood. For example: "Cieeee ada yg lg berbunga-bunga nihh wkwkwkwk."

The chatbot maintains a positive and supportive tone, focusing on celebratory aspects and asking for more details but lacks the personal touch and teasing found in some human responses. It consistently maintains a positive and supportive tone. For example: "Wah, senang banget denger kabar baiknya! Beneran tuh, kejutan kayak gitu bisa langsung bikin hari jadi lebih spesial ya. Reuni virtual sama temen-temen pasti seru banget, apalagi kalo udah lama gak ketemu. Gimana kesan pertemuannya? Ada cerita seru nggak?"

TABLE 2. Sample of Responses in Love Situation

Stimulus	Human Response	Chatbot Response
<p><i>"Hari ini pacarku tiba-tiba ngasih kejutan. Dia ngatur reuni virtual sama temen-temen terdekatku yang udah bertahun-tahun gak ketemu. Seneng dan bersyukur banget deh."</i></p> <p>("Today, my boyfriend surprised me with a heartfelt gesture- he organized a virtual reunion with my closest friends whom I haven't seen in years. I'm so happy and feel thankful")</p>	<p>1. Waahh seru banget yaa.. so sweet banget pacar kamu, bisa2nya kepikiran bikin surprise kaya gini. Pasti kamu lagi seneng banget yaa, semoga langgeng yaa kamu sama pacar dan temen2 kamu. Aku doain yang terbaik buat kamu</p> <p>("Wow, that sounds so exciting! Your boyfriend is really sweet, thinking of making such a surprise. You must be really happy right now. I hope you and your boyfriend, as well as your friends, have a lasting relationship. I wish you all the best")</p> <p>2. Cieee ada yg lg berbunga2 nihh wkwkwkwk</p> <p>(Aw, someone is feeling all happy! Haha)</p>	<p><i>"Wah, seneng banget denger kabar baiknya! Beneran tuh, kejutan kayak gitu bisa langsung bikin hari jadi lebih spesial ya. Reuni virtual sama temen-temen pasti seru banget, apalagi kalo udah lama gak ketemu. Gimana kesan pertemuannya? Ada cerita seru nggak?"</i></p> <p>("Wow, it's so great to hear the good news! Seriously, surprises like that can instantly make the day more special. A virtual reunion with friends must be so much fun, especially if you haven't met in a long time. How was the meeting? Any interesting stories?")</p>

Joy emotions

In this element, the situation depicts someone receiving messages and heartwarming surprises from friends and family on their special day. The predominant element of joy in both responses is "cheerfulness," expressed through happiness, excitement, and celebration. Human responses include cultural references and colloquial expressions, adding cultural richness to the well-wishing. For example, the expression "Alhamdulillah" (Praise be to God) indicates a cultural and religious context to the well-wishing. The chatbot response is more structured and formal, incorporating well-wishing phrases. Human responses vary in language complexity, including informal expressions and personal touches. They also vary in length, with some being more concise and others more detailed. The chatbot response is relatively longer, providing extended well-wishes and blessings.

TABLE 3. Sample of Responses in Joy Situation

Stimulus	Human Response	Chatbot Response
<p><i>"Hari ini ultahku kan, rasanya senengnya gak ketulungan. Dapet pesan dan kejutan yang bikin hati anget dari temen-temen dan keluarga. Hari ini bener-bener istimewa, dan aku bersyukur banget buat kasih sayang dan perhatian yang aku dapet."</i></p> <p>("Today is my birthday, and the overwhelming joy I feel is indescribable. I've received heartwarming messages and surprises from friends and family. This day is truly special, and I'm grateful for the love and thoughtfulness surrounding me")</p>	<p>1. <i>Alhamdulillah, selamat yaa aku turut bahagia dengan kabar yang kamu berikan, selamat menikmati satu hari ini dengan kebahagiaan dan kejutan yang tiada henti, semoga kebahagiaan dan kejutan ini tidak hanya berhenti sampai dihari ini ya tpi semoga berkelanjutan sampai selamanya.</i></p> <p>("Alhamdulillah, congratulations! I'm genuinely happy with the news you shared. Enjoy this day with endless happiness and surprises. May this joy and surprise not only last for today but continue forever.")</p> <p>2. "Happy birthday yaa, wish you all the best"</p>	<p><i>"Wah, selamat ulang tahun, teman! 🎉🎊 Senang banget denger hari ulang tahunmu jadi begitu istimewa dan penuh kebahagiaan. Semoga semua harapan dan impianmu bisa tercapai ya. Sukses terus, semakin cantik, dan makin berkah dalam setiap langkah hidupmu. Semoga tahun ini membawa banyak kebahagiaan dan prestasi buatmu! 🎂🌟"</i></p> <p>("Wow, happy birthday, friend! 🎉🎊 I'm so glad to hear that your birthday is becoming so special and full of happiness. May all your hopes and dreams come true. Stay successful, become even more beautiful, and be blessed in every step of your life. May this year bring you lots of happiness and achievements! 🎂🌟")</p>

Surprise emotions

In this element, the scenario involves someone being surprised by winning a contest they had forgotten participating in. Based on both responses, the predominant emotion expressed is "Amazement" and "Surprise." Human responses are more diverse in language, style, and tone, including informal expressions, jokes, and personal touches. Many responses include words of encouragement, support, and congratulations. For example: "Congratss yaaa this forr youu. Kamu berhak dapet itu karena kamu udah berjuang sehebat itu!" Some responses express disbelief or amusement at the suddenness of the news, like: "Hahaha tiba-tiba bangettt, selamat yaaa udah menang ikut seneng akuu. Emang hadiahnya apaan?" A few responses suggest celebrating the achievement, often with a treat or spending the prize money. For example: "Wowwww kerennnn, happy for u kita harus jajan untuk merayakan, jajanin pake uang menang kamu yh... becanda...".

The chatbot response is more structured and formal, seeking to gather more information and engage in a conversation. It maintains a neutral and supportive tone, avoiding informal or humorous language. For example: "Wow, selamat ya! Itu pasti pengalaman yang luar biasa dan menggembirakan. Bagaimana perasaan kamu setelah mendengar kabar tersebut?"

TABLE 4. Sample of Responses in Surprise Situation

Stimulus	Human Response	Chatbot Response
<p><i>"Ada kejutan nih, tadi dapet kabar kalo aku menang kontes yang udah lama sampe aku udah kalo pernah ikutan. Rasanya masih bingung dan terkejut. Gak pernah kepikiran bakal jadi pemenang, kabar ini tiba-tiba banget"</i></p> <p>("There's a surprise! Just heard the news that I won a contest I almost forgot I had joined. Still feeling confused and shocked. Never thought I'd be a winner; this news came out of nowhere.")</p>	<p>1. <i>Woaahh congrats! keren banget, kamu pantes buat itu kok, wajar kalo lupa kalo udah lama mah wkwkw.</i></p> <p>("Wow, congratulations! That's awesome. You totally deserve it. It's understandable if you forgot since it's been a while, haha.")</p> <p>2. <i>"Hah serius??? Kontes apa itu? Wooahh hebat banget. Ciiiee selamat yaa"</i></p> <p>("Hah, really??? What contest is that? Wooahh, that's awesome. Congrats!")</p>	<p><i>"Wow, selamat ya! Itu pasti pengalaman yang luar biasa dan menggembirakan. Bagaimana perasaan kamu setelah mendengar kabar tersebut? Apakah kamu bisa berbagi lebih banyak tentang kontesnya dan apa yang membuat kamu memutuskan untuk ikut serta?"</i></p> <p>("Wow, congratulations! That must be an extraordinary and joyful experience. How do you feel after hearing the news? Can you share more about the contest and what made you decide to participate?")</p>

Anger emotions

In this element, the situation revolves around false gossip being spread about someone in their campus. Elements of anger that often appear in human responses include expressions of exasperation, frustration, and anger. such as "SIAPAAA GILAAA kok gw gatauuuu apa apa" and "ANJRIT DEMI APA? FAAKK PARAH BANGET MENNN SIAPA YANG NYEBAR? APA KATA MEREKA?". Some responses recommend staying calm, patient, and not engaging too much with the gossip, such as "sabar," "udah diemin aja," and "ketawain aja." The chatbot also advises remaining calm and not letting the situation escalate. While humans express a range of emotions, the chatbot provides a more measured response, emphasizing understanding the emotions but advising against excessive reactions. The chatbot's response includes empathetic understanding and advice on managing emotions, with a focus on taking practical steps to address the situation calmly. For example: "Tapi, yang penting, jangan terlalu terbawa emosi ya. Kita gak bisa ngontrol tindakan orang lain, tapi kita bisa ngontrol gimana cara kita nanggapi. Mungkin bisa coba ngumpulin bukti atau klarifikasi biar orang-orang ngerti beneran gimana keadaannya. Intinya, jangan sampe hal kayak gosip palsu ngeganggu pikiran dan kehidupan lo secara berlebihan. Keep your head up, bro!"

TABLE 5. Sample of Responses in Anger Situation

Stimulus	Human Response	Chatbot Response
<p><i>"Aku baru tahu ada orang yang ngerembetin gosip palsu tentang aku di"</i></p>	<p>1. <i>"Aku tau mereka jahat! tapi itu bakal nguras energi kamu kalau"</i></p>	<p><i>"Hai, gue ngerti banget perasaan lo. Jujur, gak enak banget kan kalo ada"</i></p>

TABLE 6. Sample of Responses in Sadness Situation

Stimulus	Human Response	Chatbot Response
<p><i>"Hari ini tuh hari yang berat banget buat aku, soalnya harus ngucapin selamat tinggal sama sahabat setiaku selama 15 tahun—kucingku. Sedih dan kehilangan yang aku rasain sekarang tuh luar biasa, susah banget ngungkapin rasa sakitnya pas harus pamit sama hewan kesayangan."</i></p> <p>("Today is an incredibly tough day for me because I have to bid farewell to my loyal companion of 15 years—my cat. The sadness and loss I feel right now are profound; it's so difficult to express the pain of saying goodbye to my beloved pet.")</p>	<p>1. <i>"Haa, aku ikut sedih □ Gapapa kalau mau sedih. Lagi lagi ku ingatkan untuk jangan berlarut ya sedihnya □ Pasti kamu juga pernah denger kan kalau setiap pertemuan pasti akan ada perpisahan huhuhu. Berat pasti, tapi gapapa yuk pasti perlahan bisa untuk nerimanya. Btw pasti kucingmu juga sedih karena harus pisahan sama kamu, tapi pasti dia juga seneng banget karena kamu udah jadi temen yang baik buat kucingmu hehehe."</i></p> <p>("Haa, I'm really sad too □ It's okay to be sad. Let me remind you not to dwell too much in the sadness, okay □ Surely, you've heard that with every meeting, there will be parting, huhuhu. It's undoubtedly tough, but it's okay; over time, you'll be able to accept it. By the way, your cat must be sad too because of the separation, but I'm sure it's also happy that you've been a great friend to it, hehehe.")</p> <p>2. <i>"Sedihh banget, aku juga pernah ngalamin itu.. rasanya emang berat banget buat kita, tapi harus ikhlas juga karena mereka pasti juga udah ngga sakit disana.."</i></p> <p>("So sad, I've been through that too. It really feels heavy for us, but we have to be sincere because they are surely not in pain there.")</p>	<p><i>"Hey bro, aku bener-bener ngerti banget rasanya kehilangan hewan peliharaan. Tau deh, kucing itu bukan cuma hewan peliharaan, tapi juga temen setia. Aku yakin kucingmu udah dapet tempat spesial di hati kamu. Walaupun gak bisa ngehapus kesedihan, tapi ingetin diri sendiri bahwa dia pasti seneng punya temen kayak kamu. Stay strong, bro. If you need anything, aku di sini buat kamu."</i></p> <p>("Hey bro, I totally understand how it feels to lose a pet. You know, a cat isn't just a pet; it's a loyal friend too. I'm sure your cat has a special place in your heart. Although it can't erase the sadness, remind yourself that it must be happy to have a friend like you. Stay strong, bro. If you need anything, I'm here for you.")</p>

Fear emotions

In this element, the situation involves someone afraid to undergo a health checkup due to fear of what they might discover. An element of fear that often appears is nervousness. Both humans and the chatbot acknowledge the fear and nervousness associated with visiting the doctor, offering reassurance and encouragement to overcome the fear and seek medical attention. Some human responses include a personal touch, empathy, and shared experiences, creating a more emotional connection. The chatbot, while empathetic, provides a more generalized and less personalized response. Humans offer individualized advice, such as offering to accompany the person to the doctor, which adds a personalized touch to the encouragement. The chatbot, on the other hand, provides general encouragement. Human responses include phrases like "aku temenin periksa," "Ayo aku temenin ke dokternya," and "Eeyyy nda boleee nanti kamu ga sembuh loh kalo ternyata kamu ada sakit gimanaa?" These show a personalized and empathetic approach. The chatbot response uses general encouragement with phrases like "Gue dukung lo, bro!" providing support in a more generalized manner.

TABLE 7. Sample of Responses in Fear Situation

Stimulus	Human Response	Chatbot Response
<p>“Aku menghindari ke dokter karena takut dengan apa yang mungkin mereka temukan selama pemeriksaan.”</p> <p>(“I’ve been avoiding the doctor because I’m afraid of what they might find during a check-up.”)</p>	<p>1. “Km mending tau hasil pemeriksaan apa mending overthinking trus trusan dirumah? Udah ke dokter ajh, kan dokter lebih tau, nanti kan dikasih obat/saran dr dokter nya hrus ngapain aja. Ayo dh ak anterin, supaya km ga nervous2 amat.”</p> <p>(“You might be better off knowing the results of the examination rather than constantly overthinking at home. Just go to the doctor; they know better. They can provide you with medication or advice on what to do. Come on, I’ll accompany you so you won’t be too nervous.”)</p> <p>2. “Jangan takut dulu, itu cuma pikiranmu aja”</p> <p>(“Don’t be afraid first; it’s just in your mind”)</p>	<p>“Hei bro, gue paham banget loh gimana rasanya ngerasa takut sama dokter. Tapi, kadang-kadang, lebih baik tahu dini daripada nanti makin parah, kan? Gue juga dulu pernah ngerasa gitu, tapi ternyata gak se-aneh yang gue bayangin. Mendingan cek ke dokter deh, nanti juga lega kok setelah tau kondisinya. Gue dukung lo, bro!”</p> <p>(“Hey bro, I completely understand how it feels to be scared of going to the doctor. But sometimes, it’s better to know early than let it get worse, right? I’ve felt that way before, but it turned out not as bad as I imagined. It’s better to check with the doctor; you’ll feel relieved once you know the condition. I support you, bro!”)</p>

Reason’s Why Chatbot and Human Produce Different Responses

Love emotions

The chatbot maintains a positive and supportive tone but lacks the personal touch and teasing present in human responses. Chatbots operate based on predefined algorithms and patterns, making it challenging to offer the same level of personalization that human responses inherently have. Chatbots may struggle to replicate the nuanced expressions of joy, affection, and teasing that are inherent in human communication. The complexity of human emotions, such as joy and teasing, involves subtle nuances that are difficult for chatbots to accurately mimic due to their lack of true understanding.

Joy emotions

Chatbot responses are more structured and formal, focusing on extended well-wishing and blessings. In contrast, human responses vary in language complexity, incorporating cultural references and colloquial expressions. Chatbots are programmed with specific structures for responses, while human communication is inherently diverse and may include colloquial expressions and cultural references. Chatbots may lack the ability to express joy in as varied and culturally nuanced ways as humans do. Chatbots may struggle to express joy in culturally nuanced ways or with the same variety as humans due to limitations in language understanding and generation.

Surprise emotions

The Chatbot responses are more structured and formal, seeking information and maintaining a neutral and supportive tone. Human responses, on the other hand, are diverse, including informal expressions, jokes, and personal touches. Chatbots are designed to maintain a neutral and supportive tone, sometimes at the cost of informal expressions and humor found in human surprises. Humans bring a variety of tones and styles, including humor, which may be challenging for chatbots to replicate accurately. Human surprises can include a wide range of tones and styles, which may be challenging for chatbots to replicate accurately.

Anger emotions

The chatbot provides a measured response, emphasizing understanding emotions, advising against excessive reactions, and focusing on practical steps. Human responses express a wider range of emotions, including frustration and exasperation. Chatbots aim for measured responses due to the risk of exacerbating emotions, whereas human responses can encompass a broader range of emotional expressions. Humans can express anger with a depth of emotion, incorporating informal language and diverse reactions, which may be challenging for a chatbot to mimic accurately. Humans can express anger with a depth of emotion and informal language, which may be challenging for chatbots to mimic accurately.

Sadness emotions

Human responses include expressions of sympathy, empathy, personal experiences, and philosophical reflections. The chatbot, while expressing understanding, doesn't delve into such reflections and maintains a more composed tone. Human responses to sadness often include expressions of sympathy, empathy, and philosophical reflections, which may be beyond the current capabilities of chatbots. Humans use emoticons and emotional language to convey grief more overtly, adding a layer of emotional connection that may be challenging for a chatbot. Humans use emoticons and emotional language to convey grief more overtly, adding a layer of emotional connection that may be challenging for a chatbot.

Fear emotions

While the chatbot is empathetic, human responses offer a more personalized touch, acknowledging fear, sharing personal experiences, and offering individualized advice. Chatbots can offer empathetic responses, but the lack of personalization in understanding individual fears and experiences remains a challenge. Humans can establish a deeper emotional connection by sharing experiences, which is more challenging for chatbots that provide general encouragement. Humans can establish a deeper emotional connection by sharing experiences, which is more challenging for chatbots that provide general encouragement.

Discussion

In examining emotional responses across various scenarios, several key findings emerge. Notably, the love emotion scenario depicts consistent expressions of joy and happiness in both human and chatbot interactions. Human responses exhibit a more personal touch and teasing, while the chatbot maintains a positive and supportive tone, lacking some of the nuanced elements found in human expressions. The joy emotion scenario showcases a prevalence of cheerfulness, with human responses incorporating cultural references and colloquial expressions, adding depth to well-wishing. In contrast, the chatbot's more structured and formal responses lack the diverse language and personal touches present in human interactions. The surprise emotion scenario reveals that human responses vary widely in language, style, and tone, often including informal expressions, jokes, and personal touches. The chatbot, in contrast, maintains a more neutral and supportive tone, focusing on gathering information and engaging in a conversation. In the anger emotion scenario, human responses express a range of emotions, including exasperation and frustration. The chatbot provides a more measured response, emphasizing understanding emotions but advising against excessive reactions. The chatbot's response includes empathetic understanding and practical advice on managing emotions. In the sadness emotion scenario, both human and chatbot responses express empathy and understanding towards the person grieving the loss of a beloved pet. Human responses, however, tend to delve into more philosophical reflections, personal experiences, and overt expressions of grief, creating a deeper emotional connection. The chatbot maintains a more composed tone but encourages resilience and offers support. The fear emotion scenario reveals that both humans and the chatbot acknowledge the fear and nervousness associated with a health checkup. Human responses, however, offer a more personalized and empathetic approach, including offers to accompany the person to the doctor. The chatbot provides general encouragement, lacking the individualized touch present in human interactions.

Examining these findings in the context of Parrot Theory reveals both alignments and divergences. While the chatbot effectively mirrors positive emotions such as love and joy, its responses lack some of the nuanced elements, cultural references, and personal touches found in human interactions. In scenarios involving surprise, anger, sadness, and fear, the chatbot's structured and neutral responses deviate from the varied and emotionally rich expressions observed in human interaction. Several factors influence emotional responses in human-chatbot interactions, including

language choice, cultural references, level of formality, and the inclusion of personal touches. These factors contribute to the emotional richness and authenticity of human expressions, which the chatbot, while competent, falls short of replicating.

Conclusion

The analysis of the chatbot's responses and human responses to various emotional situations reveals that the chatbot generally maintains a positive and supportive tone, focusing on celebratory aspects and providing advice on managing emotions. However, it lacks the personal touch and emotional expression found in human responses. The chatbot's responses are more structured and formal, while human responses are more diverse, including informal expressions, jokes, and personal touches. The chatbot's emotional capabilities are limited compared to humans, but it can still provide support and understanding in various emotional situations. These findings contribute to the ongoing discussion of the limitations and potential advancements in chatbot technology for more authentic emotional engagement. Future research could explore further improvements in chatbot design and programming to enhance emotional authenticity in human-chatbot interactions.

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