Companion Robot -UNO

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ABSTRACT

A robot with functionalities such as enhanced mobility, voice command interaction, navigation entertainment and information, companionship, education and assistance, time management and personalization, serves as a versatile and valuable tool that can improve your daily life in various ways. Whether is assisting with tasks offering entertainment and companionship, providing educational support or helping you to stay organized, such a robot can significantly enhance your overall quality of life and convenience.

INTRODUCTION

A multifunctional robot designed with enhanced mobility, voice command interaction, navigation, entertainment and information capabilities can revolutionize daily life in numerous ways. Its enhanced mobility ensures it can navigate diverse environments efficiently, assisting with tasks and providing valuable support. Voice command interaction makes the interaction seamless, enabling users to communicate with the robot effortlessly. Navigation capabilities contribute to its utility, ensuring it can assist in various settings and scenarios. The inclusion of entertainment and information features adds a recreational aspect, offering not only assistance but also enjoyable experiences. Whether it's playing music, sharing interesting facts, or providing news updates, the robot becomes a versatile source of entertainment and information. Companionship is a crucial aspect, addressing emotional needs and fostering a sense of connection. The robot's ability to engage in conversations, recognize emotions, and adapt its responses contributes to a fulfilling companionship experience Education and assistance functions make the robot a valuable tool for learning and problem-solving. It can provide educational support, answer queries, and assist with various tasks, making it a versatile educational resource. Time management and personalization features enhance efficiency by helping users stay organized. From setting reminders to managing schedules, the robot becomes a reliable assistant, contributing to improved productivity and time utilization. In summary, a robot equipped with these functionalities becomes an indispensable part of daily life, offering a holistic approach to improving overall quality of life, convenience, and well-being. Its versatility makes it a valuable asset, addressing various aspects of human needs and enhancing the overall daily living experience.

LITERATURE REVIEW

[1]   W. Graterol, J. Diaz-Amado, Y. Cardinale, I. Dongo, E. Lopes-Silva, and C. Santos- Libarino, ''Emotion detection for social robots based on nlp transformers and an emotion ontology,'' 2021.
Robots can detect emotions in real- time using text, speech, images, and videos.The EMONTO framework stores emotions to guide robot behavior and tasks.The initial version of EMONTO focuses on detecting emotions in text, tested with museum robots. NLP transformers help analyze emotions in text, making it more accurate**.**

[2]   S. Minaee, M. Minaei and A. Abdolrashidi " Deep-Emotion: Facial Expression Recognition Using Attentional Convolutional Network" - Minaee, M. Minaei, and A.Abdolrashidi, Apr. 2021

Deep learning model called attentional convolutional network for facial expression recognition. It improves upon traditional methods by focusing on important facial regions and achieves better results on various datasets, showing that different emotions are associated with different parts of the face.

[3]   S. Saunderson and G. Nejat, ''How robots influence humans: A survey of nonverbal communication in social human–robot interaction,'' Int. J. Social Robot, Aug. 2019.
Investigating human-robot interactions is crucial to ensure that robots conform to human social norms and expectations. Nonverbal communication by robots, including kinesics, proxemics, haptics, and chronemics, plays a significant role in these interactions. This paper surveys how these nonverbal communication modes influence humans in terms of cognitive framing, emotional responses, behavioral reactions, and task performance

[4]   DY. R. Pandeya, B. Bhattarai, and J. Lee, ''Deep-Learning-Based multi-modal emotion classification for music videos,''Jul. 2021.

Music videos are rich in visual and acoustic information, both of which influence the conveyed emotions. This paper introduces an affective computing system that combines music, video, and facial expressions for emotional analysis.

[5]   S. Garg, N. Sünderhauf, F. Dayoub, D. Morrison, A. Cosgun, G. Carneiro,Q. Wu, T.-J. Chin, I. Reid, S. Gould, P. Corke, and M. Milford, ''Semanticsfor robotic mapping, perception and interaction: A survey,'' Found TrendsRobot, 2020.

For robots to navigate and interact more richly with the world around them, they will likely require a deeper understanding of the world in which they operate. In robotics and related research fields, the study of understanding is often referred to as semantics, which dictates what does the world "mean" to a robot, and is strongly tied to the question of how to represent that meaning. With humans and robots increasingly operating in the same world, the prospects of human–robot interaction also bring semantics and ontology of natural language into the picture.

PAPER COMPARISON

PROJECT TITLE	AUTHORS	COMPARITIVE STUDY
Emotion detection for social robots based on nlp transformers and an emotion ontolog	W. Graterol, J. Diaz-Amado, Y. Cardinale, I. Dongo, E. Lopes-Silva, andC. Santos- Libarino,	Enhanced robots offer versatile tools for daily life, but a study delves into real time emotion detection using EMONTO This framework analyzes text, speech images, and videos to detect emotions guiding robot behavior accordingly EMONTO's initial focus on text-based emotion detection, tested with museum robots, employs NLP transformers for precision. While practical functionalities improve quality of life, understanding human emotions adds emotional intelligence to robot interactions showcasing diverse contributions to human experience. Enhanced robots offer versatile tools for daily life. A study explores real-time emotion detection through EMONTO guiding robot behavior based on emotional context. Initially focused on text-based emotion detection, EMONTO employs NLP transformers for precision Understanding human emotions adds emotional intelligence to robot interactions, complementing practical functionalities to enhance quality of life.

Deep-emotion: Facial expression recognition using attentional convolutional network	S. Minaee, Minaee, M. Minaei, andA. Abdolrashidi	The study on "Deep-emotion: Facial expression recognition using attentional convolutional network" focuses on advancing facial expression recognition technology by utilizing attentional convolutional networks. Its primary goal is to improve emotional understanding in various applications. In contrast, the comparative topic explores the multifaceted capabilities of a robot equipped with enhanced mobility, voice command interaction, navigation, entertainment, companionship, education, assistance, time management, and personalization. This versatile robot is positioned as a valuable tool that enriches daily life through task assistance, entertainment, companionship, educational support, and organizational aid. While the facial expression recognition study delves into nuanced emotional understanding, the robot's functionalities offer a broader spectrum of improvements. It emphasizes the robot's potential to significantly enhance overall quality of life and convenience through diverse applications.
How robots influence humans: A survey of nonverbal communication in social human– robot interaction	S. Saunderson and G. Nejat	The study on "How robots influence humans: A survey of nonverbal communication in social human–robot interaction" delves into the impact of robots on human behavior, particularly focusing on nonverbal communication aspects. It investigates how robots utilize nonverbal cues to influence and shape social interactions, shedding light on the intricate dynamics between humans and robots in social settings. In contrast, the comparative topic explores the extensive functionalities of a robot, encompassing enhanced mobility, voice command interaction, navigation, entertainment, companionship, education, assistance, time management, and personalization. This multifaceted portrayal positions the robot as a versatile tool capable of significantly enhancing daily life through various means, including task assistance, entertainment, companionship, educational support, and organizational aid. It emphasizes the comprehensive influence of robots on overall quality of life and convenience, showcasing their

		potential to serve as invaluable companions and assistants in diverse scenarios.
Deep-Learning-Based multi-modal emotion classification for music videos	DY. R. Pandeya, B. Bhattarai, and J. Lee	The project topic revolves around a versatile robot equipped with functionalities such as enhanced mobility, voice command interaction, and diverse applications in daily life. It underscores the potential benefits across various domains such as companionship, education, assistance, and time management. This multifaceted perspective positions the robot as a valuable asset capable of addressing multiple needs and enhancing overall convenience in daily routines. In contrast, the other topic delves into a specific application: deep-learning-based multi-modal emotion classification for music videos. This research utilizes artificial intelligence to analyze emotions portrayed in multimedia content particularly focusing on music videos. Its objective is to comprehend and categorize emotions expressed in these videos through a deep learning approach While both topics signify advancements in technology, they diverge in their scope, with the former highlighting the broad utility of a multifunctional robot and the latter concentrating on a specialized application in emotion analysis for music videos.
Semantics for robotic mapping, perception and interaction: A survey	S. Garg, N. Sünderhauf, F. Dayoub, D Morrison, A. Cosgun, G. Carneiro, Q Wu, T.- J. Chin, I. Reid, S. Gould, P. Corke, and M. Milford	This topic, "Semantics for robotic mapping, perception, and interaction: A survey," delves into the semantic aspects of robotic systems, exploring how semantics can improve mapping perception, and interaction capabilities in robotics.In comparison, the project topic discusses a robot with a broad range of functionalities, emphasizing its versatility in enhancing daily life through features like enhanced mobility voice command interaction, and more While the first topic focuses on the theoretical underpinnings of semantics in robotics, the second topic is more application-oriented, highlighting the practical benefits a multifunctional robo can bring to various aspects of human life.
		In summary, this topic delves into the theoretical framework of semantics in robotics, while the project topic emphasizes the practical applications of a versatile robot in enhancing daily life.

CONCLUSION

In conclusion, the multifunctional robot described, with its enhanced mobility, voice command interaction, navigation, entertainment, and information capabilities, represents a transformative force in the fabric of daily life. By seamlessly navigating diverse environments and efficiently assisting with tasks, this robot becomes a reliable companion, capable of providing invaluable support.

The integration of voice command interaction not only simplifies communication but also enhances user experience, making interactions effortless and natural. The robot's navigation capabilities ensure adaptability to various settings, amplifying its utility across different scenarios.

Furthermore, the time management and personalization features contribute to efficiency, aiding users in staying organized and enhancing productivity. In essence, this multifaceted robot emerges as an indispensable component of daily life, providing a holistic approach to improving overall quality of life, convenience, and well-being. Its versatility makes it a valuable asset, addressing various aspects of human needs and enhancing the overall daily living experience in profound ways.

REFERENCES

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[3]. S. Saunderson and G. Nejat, ''How robots influence humans: A survey of nonverbal communication in social human–robot interaction,'' Int. J. Social Robot.,Aug. 2019.
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