Communication and Use of Intelligent Humanoid Nurse Robots

* **Dhiraj V. Astonkar, Megha S. Chinchamalatpure**
Dr.Sau.Kamaltai Gawai Institute of Engineering & Technology, Darapur, Dist. Amravati, Maharashtra, India
*Corresponding author Email: dhirajastonkar@gmail.com

Abstract. Human movement and Designed to reflect communications Professional robots are humanoid robots. Like all service robots, They are cost savings and By automating tasks that lead to productivity Provide value. Humanoid robots are professional Service is a relatively new form of robot. The humanoid robot is one of the humanoid robots developed by Hanson Robotics. Sophia has a human-like conversation and can express Many human-like facial expressions. Research on human robots and space exploration, personal assistance and care, education and hobby, search and recovery, manufacture and maintenance, public relations and health Human figures move, speak and function through certain features such as sensors and actuators. Android is like a human being A human robot, while ganoids look like female humans. Human figures function through certain features. They have sensors that help them sense Their surroundings, And the flexibility with which they change, Such as law enforcement and movement Have many features. Human working robot for working people their care and complete protection Helps them by making sure. Such robots also work in factories, at the same time humanoid robots, Repeatable tasks without error, In form and in ambiguous function Not intended to imitate humans. Rather than being a "do it all" assistant - They have very specific roles. Our own TUG mobile robots and Robot's Rumba are every prime example of humanoid robots. Robots made in human form or in the shape of the human body - a head, One body, two arms and Two legs. Androids are artificial creatures like humans, at least in appearance but also in behavior. Now available for purchase or rent for an undisclosed amount, the related Android labeled Ameca has beautiful face and movable hands and is charged as the "perfect human robot operating system for human-robot communication".

Keywords: Humanoid robots, Humanoid service robots, Communication robot, Anthropomorphic robot, Sociable humanoid robots, Entertainment robots, Dancing robots, Nurse robots with human form, intelligent human form robots.

1. Introduction

Actuators are the motors responsible for the movement of the robot. Humanoid robots are designed to mimic the human body. Although with different structure, they use accelerators that act like muscles and joints. The actuators of humanoid robots can be electric, pneumatic or hydraulic. Beautiful Robots with aesthetic design, rich personalities and social cognitive intelligence can connect with humans deeply and meaningfully. Android is a humanoid robot or other artificial creature often made of flesh-like material. Cyborg or "cybernetic organism" refers to an organism with organic and biomechatronic body parts. Many transgender people accept biomechanical body parts as their own Body organs and perform some amazing functions. Work beyond human capabilities. Amega is a humanoid robot from the British company Engineering Arts. The company demands 20 years of innovation in motion and natural gestures, with the ability to use sophisticated AI. Robotics involves the design, construction, function and application of robots. The goal of robotics is to help humans design machines. Robots can improve production, performance, and quality and product sustainability in many situations: Robots do not get bored Like humans. Until they get tired, they can do the same thing over and over again. They are very precise - the use of robotics up to fractions of an inch has the potential to increase productivity and bring greater productivity. Production work for Developed countries. When productivity increases, Is likely to play a significant role in labor interests. Sofia is unique because she was the first famous robot to touch our knowledge and emotions at the same time. She speaks softly, intelligently, lovingly and emphatically. Sofia became very popular and gained many fans by impressing people in her conversations and contacts. Robots can work with greater accuracy, reducing time and materials, but they can also work faster than humans. In this article, Analytics Insight presents the top 10 cheap customized robots to buy in India by 2021

2. Humanoid Robots

In 1986, Honda began research into two-legged human robots. Honda Motorcycles, Cars and energy products In 1986, Honda Mobile Accepts a New Challenge Created the two-legged human robot. The main idea of Honda's R&D robot that in 1986, Honda began research on two - legged human robots. [1]. From the P2 and P3 prototypes Using the experience gained, ASIMO Research Beneficial for this purpose and our latest bipolar robot. Its name, ASIMO, Refers to the advanced step of the innovative movement, And this is all Honda human robots compound name. [2]. Humanoid robots are amazingly complex machines, capable of traveling on the same terrible terrain that humans can cross, and capable of performing the same tasks as humans, with the potential consequences of Challenging control problems and calculation Relatively difficult planning issues. In this chapter, Through complex and rough terrain Walking planning to guide human robots and We look at

locomotion. Humanoid robots have the ability to cross obstacles in their path and allow versatility and agility in all directions. [3]. Natural work without human restraint or supervision In order to act spontaneously and safely in environments we design humanoid robots. Specific we did not design solutions for the robot needs. Create robots that operate in different real world environments based on our goal. Simulations of neural networks are Read samples from neuroscience Used to refine, and more we can use human simulation robots. [4].

3. Humanoid Service Robots

The perceived pleasure of the consumer is fully mediated The result Consumer confidence in the use of human service robots, (a) consumer perceived confidence, In perceived joy Has a positive effect And (b) their perceived happiness has a positive effect consumer motives for using human service robots. Field research in the public service system. Humanitarian service robots are on the rise, collaborating with public service companies to improve customer service [5]. Human figure service robots are a growing reality increasingly changing many human service providers Businesses Humane service reflects the origin of By engaging customers through technology About how companies can be competitive Robots (HSRs) spells in business magazines. Service staff, whether they are human or not Although robot, Representing the company and May effect the customer-organizational relationship. Therefore, using HSRs also requires companies to understand how they serve robots are valued and responded to by customers. [6]. Humanitarian service robots have made rapid advances in assisting global health care in crisis. COVID-19 International Distribution. This case provides an overview of the inclusion of robots in health care in relation to pre- and intra-atomic environments. The human figure, size and movement are particularly focused on humanoid service robots Favorable in the use of physics spaces designed for humans [7].

4. Communication Robot

Positive capabilities communication robots at the railway station: Communication robots at the railway station At the railway station: said at the railway station. Reports also said that their reactions were significant as people saw them at the station. Former museums, universities and schools where robots are interested focus on research. [30] So, the robot that talks to humans like humans does not know how ordinary people will react [8]. Also, many robots that those who do not want to contact the train station are usually busy on their journeys. We believe domain testing is useful in such a busy environment area, and people are becoming more and more interested in robots, especially those who are not busy, it seems we have stopped walking. See. the station In the robot when going They are through. the other hand, many field tests show that many people are more interested in robots, such as touching robots for a long time. [9].

5. Anthropomorphic Robot

A 7r anthropological robot-arm was activated by completely hostile mckibben prosthetic muscle pairs. The architecture was done in robotic arm verification teleportation mode. This dual career and education 7-dof anthropology robot mckibpen has the potential to design the muscle motor within the framework. Most recently, the salford robotics group published results related to the development of the university of rehabilitation and rehabilitation and 7-dof exoskeleton. Upper limb exercise is driven by pneumatic macular muscles [10]. This outer skeleton, lighter than 2 kg, is successful, but the orthodox device is like a robot's hand. On the other hand, it is a 6-dof system strictly due to the shoulder joint, as well as a system that guarantees true freedom between roll-pitch-yaw movements as a wrist mechanism. This is a 7r similar to the wrist type. Roll-pitch-roll wrist type conventional 7r anthropomorphic robot weapons. For the set of other fingers, the use of a simple two-finger grip that echoes the thumb gave the robot hand. Before manipulating the mechanical design of the anthropological robot arm, it is necessary to describe the characteristics of the machine muscle drivers. Mechanizing this robot-hand. [11]. Human figures. He said, "an anthropological robot is shaped like a human, its environment is similar to the eyes, and it handles mechanical objects. Which is similar to hands and arms, and the human body moving in many directions in unison to movements "of such robots telescope movement is required "conceptually maps its shape and movements to its own body transformation ego" [12].

6. Sociable Humanoid Robots

Friendly Human robots make dramatic and intriguing changes in the way autonomous robots think about control. Traditionally, autonomous robots have been designed to operate as freely and remotely as possible from humans working in dangerous and hostile environments. [13]. Other applications, such as hospital feeding, lawn mowing, or ground clearing, bring with it the autonomy of introducing the robot with the obvious human form, in situations where robots are shared with the public, but tasks that are not human-robotic are still limited. Highlight Kismet and our own efforts in creating sociable humanoid robots that engage people through explicit social ideas. Pays for the emotion and motivation implemented in Kismot. The next section shows how Kismot's clear answers are algorithmically generated [14].

7. Entertainment Robots

In entertainment robots how kids make robots do these features affect what is being explained? Intellectual, biological and do these features affect what is being explained? Intellectual, biological and two studies, the age of the child, the behavior of the robot and depending on the characteristics, robot animals have animistic intuition investigate whether use. For example, the robot dogs can recognize their name, find a ball and do it accessible, and they can dance to music. [29] aside from that, improving robot technology is about entertainment robots are the central basis, and their increased reality appears. There are significant practical advantages [15]. Entertainment robots biologically inspired for children for a long time are also designed for technologies, which are ultimately become pets, become a source of comfort and learning. However, children are different from adults in many ways differ, and how children do these "border items" explaining or advanced techniques children's learning and how they contribute to development there are relatively few studies. About entertainment robots what children think the purpose of the current work is to explore whether [16]. Entertainment robots invade the home market, and biologically inspired robots respond to attempts to understand the boundaries of living animal research. . Emotions robots emanate from humans do any of the different anthropological features make sense? Difference has become an important research topic [17]. For children, there is how do relatively little research children explain these "boundary objects"? The efforts of children robots and their potential behaviors the role entertainment robots in the home school system are still uncertain, especially for young children, aiding children's learning and social and moral development. Although their role is not yet clear, this study shows that entertaining robots children's ideological understanding and can be used as cognitive artifacts to explore growth. How robotics explains animals and their behavior / helping children learn what they can understand by the way, researchers use it as a useful learning aid or tool for a child can design an existing robot. However, an attractive and effective activity may not be useful to the adult or may go unnoticed by the child [18].

8. Dancing Robots

Since dance was considered a throughout human civilization, we explored communication devices and flexible-backed human Robots expressing emotions through dance. Throughout history, dance has been considered an important part of human life interaction, and Hannah's dance is an important example of being a part of our culture. [19] In the game, players must Stand on the stage and hit the colored arrows on the ground according to the music and visual notes. Since its introduction, this game has become very popular all over the world. The dance revolution was used in many ways. In addition to entertainment, it is used to train players to coordinate movements according to the pulse. It is also provided as a place for young people to meet each other. Most importantly, it is used by all people over the world Weight loss will be followed by fatigue and constant tiredness [20]. It's for interactive dance robots Robot audition for application. The proposed system evaluates the increasing problem under different real-world acoustic conditions, taking into account different types of audio sources, Multiple noise sources of various natures, continuous music and Speech stimuli and beat-synchronous ego-motion noise and Effects of ego. Trembling noise (EN). Overall results are low Improved beat tracking accuracy by switching to reactive music Suggest, at the same time parallel to more challenging situations Improves automated speech recognition (ASR). These results Confirm the proposed application method for interactive dance robots [21].

9. Humanoid Nurse Robots

Human nurse robots are a way to achieve expressions of artificial empathy that can be highly communicated. It will be an important model for the intelligent human figure Robots are currently being developed by nurse robots in Healthcare industry. Expressing artificial empathy A Discussion IHRs Are important for nursing training today, in particular in technology-intensive health systems [**22**]. This environment is situated in an environment where humane nursing robots are hailed as intelligent humanoid robots. Human resource development was the foundation of many basic philosophies explains the possibilities of IHRs being used as human nurse robots. Explained this possibility occurs in the interval of similarity. When humans see another human being, they are in pain To sympathize with, show, and comfort those in pain [**23**].

10. Intelligent Humanoid Robots

Automatic perception of human emotional behavior from recognition of facial expressions and motives From conversational contexts Social goals are natural Human robot communication can be greatly improved. [24] Based on this study face recognition on an intelligent neural network and title detection based on latent semantic analysis for the human robot. Focuses on creating an intelligent agent that semantically interprets emotions from the human robot's facial expressions and conversational contexts. Contact us for our initial review This research uses a man-made NAO robot site. [25] The version of the robot used in this research NAO Next Gen is H25. Robot vision, To develop advanced intellectual components for speech and movement To activate researchers It contains C ++ SDKs. The robot has two built-in cameras, One at its forehead and the other at mouth level [26] Therefore, current research aims at a design Navigation strategy for humanoid robot using ambiguous logic Artificial Intelligence Algorithm. [27] Here, according to the vague rule Sense

information about base, barrier distance and bearing The angle towards the target is considered as the inputs The controller and output are [28] obtained to avoid the required speeds Barriers to the environment and achieving the desired Previous research by Big more and Picard One of the first people to make an intellectual (virtual) deployment is a Agents that establish long-term socio-emotional relationships with people.[29] In their research, the agent had a goal, and the relationship between participants and agents was encouraged to exercise more and the WAI questionnaire was evaluated. [30].

11. Conclusion

Human movement and Designed to reflect communications Professional robots are humanoid robots. Like all service robots, They are cost savings and Provide value by automating tasks that lead to productivity. Human robots are relatively professional service robots New human robots Professional service robots that mimic human movement and communication. Like all service robots, they are cost savings and Lead to productivity Provide value by automating tasks. Humanitarian service robots have made rapid advances in assisting global health care in crisis. COVID-19 International Distribution. This the research focuses on facial recognition based on intelligent neural network and title detection based on latent semantic analysis for humanoid robot. Explained this possibility occurs in the interval of similarity. When humans see another human being, For interactive dance robots Robot audition for its use. Entertainment robots invade home market, and biologically inspired robots respond to attempts to understand the boundaries of living animal research. As part of the introduction, it will be able to visualize the world's first humanoid robot with a flexible spine. Most recently, the University of Salford Robotics team released results related to rehabilitation and rehabilitation and the development of the 7-DoF Exoskeleton.

Reference

[1]. Hirose, Masato, and Kenichi Ogawa. "Honda humanoid robots development." Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences 365, no. 1850 (2007): 11-19.

[2]. Schaal, Stefan. "Is imitation learning the route to humanoid robots?." Trends in cognitive sciences 3, no. 6 (1999): 233-242.

[3]. Kuffner, James, Koichi Nishiwaki, Satoshi Kagami, Masayuki Inaba, and Hirochika Inoue. "Motion planning for humanoid robots." In Robotics research. The eleventh international symposium, pp. 365-374. Springer, Berlin, Heidelberg, 2005.

[4]. Adams, Bryan, Cynthia Breazeal, Rodney A. Brooks, and Brian Scassellati. "Humanoid robots: A new kind of tool." IEEE Intelligent Systems and Their Applications 15, no. 4 (2000): 25-31.

[5]. Van Pinxteren, Michelle ME, Ruud WH Wetzels, Jessica Rüger, Mark Pluymaekers, and Martin Wetzels. "Trust in humanoid robots: implications for services marketing." Journal of Services Marketing (2019).

[6]. Mende, Martin, Maura L. Scott, Jenny van Doorn, Dhruv Grewal, and Ilana Shanks. "Service robots rising: How humanoid robots influence service experiences and elicit compensatory consumer responses." Journal of Marketing Research 56, no. 4 (2019): 535-556.

[7]. Cotton, Sebastien, Andrew Peter Murray, and Philippe Fraisse. "Estimation of the center of mass: from humanoid robots to human beings." IEEE/ASME Transactions on Mechatronics 14, no. 6 (2009): 707-712.

[8]. Hayashi, Kotaro, Daisuke Sakamoto, Takayuki Kanda, Masahiro Shiomi, Satoshi Koizumi, Hiroshi Ishiguro, Tsukasa Ogasawara, and Norihiro Hagita. "Humanoid robots as a passive-social medium-a field experiment at a train station." In 2007 2nd ACM/IEEE International Conference on Human-Robot Interaction (HRI), pp. 137-144. IEEE, 2007.

[9]. Ayusawa, Ko, Gentiane Venture, and Yoshihiko Nakamura. "Identification of humanoid robots dynamics using floating-base motion dynamics." In 2008 IEEE/RSJ International Conference on Intelligent Robots and Systems, pp. 2854-2859. IEEE, 2008.

[10]. Tondu, Bertrand, Serge Ippolito, Jérémie Guiochet, and Alain Daidie. "A seven-degrees-of-freedom robot-arm driven by pneumatic artificial muscles for humanoid robots." The International Journal of Robotics Research 24, no. 4 (2005): 257-274.

[11]. Riek, Laurel D., Tal-Chen Rabinowitch, Paul Bremner, Anthony G. Pipe, Mike Fraser, and Peter Robinson. "Cooperative gestures: Effective signaling for humanoid robots." In 2010 5th ACM/IEEE International Conference on Human-Robot Interaction (HRI), pp. 61-68. IEEE, 2010.

[12]. Goodrich, Michael A., Jacob W. Crandall, and Emilia Barakova. "Teleoperation and beyond for assistive humanoid robots." Reviews of Human factors and ergonomics 9, no. 1 (2013): 175-226.

[13]. Vernon, David, Claes Von Hofsten, and Luciano Fadiga. A roadmap for cognitive development in humanoid robots. Vol. 11. Springer Science & Business Media, 2011.

[14]. Breazeal, Cynthia. "Emotion and sociable humanoid robots." International journal of human-computer studies 59, no. 1-2 (2003): 119-155.

[15]. Or, Jimmy. "Towards the development of emotional dancing humanoid robots." International Journal of Social Robotics 1, no. 4 (2009): 367-382.

[16]. Asada, Minoru, Karl F. MacDorman, Hiroshi Ishiguro, and Yasuo Kuniyoshi. "Cognitive developmental robotics as a new paradigm for the design of humanoid robots." Robotics and Autonomous systems 37, no. 2-3 (2001): 185-193.

[17]. Lobos-Tsunekawa, Kenzo, Francisco Leiva, and Javier Ruiz-del-Solar. "Visual navigation for biped humanoid robots using deep reinforcement learning." IEEE Robotics and Automation Letters 3, no. 4 (2018): 3247-3254.

[18]. Okita, Sandra Y., and Daniel L. Schwartz. "Young children understand of animacy and entertainment robots." International Journal of Humanoid Robotics 3, no. 03 (2006): 393-412.

[19]. Cosentino, Sarah, Estelle IS Randria, Jia-Yeu Lin, Thomas Pellegrini, Salvatore Sessa, and Atsuo Takanishi. "Group emotion recognition strategies for entertainment robots." In 2018 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), pp. 813-818. IEEE, 2018.

[20]. Okita, Sandra Y., Daniel L. Schwartz, Takanori Shibata, and Hideyuki Tokuda. "Exploring young children's attributions through entertainment robots." In ROMAN 2005. IEEE International Workshop on Robot and Human Interactive Communication, 2005, pp. 390-395. IEEE, 2005.

[21]. Song, Kai-Tai, Meng-Ju Han, and Shih-Chieh Wang. "Speech signal-based emotion recognition and its application to entertainment robots." Journal of the Chinese Institute of Engineers 37, no. 1 (2014): 14-25.

[22]. Manjula Selvam: M. Ramachandran: Malarvizhi Mani," A Survey on Digital Communication and Its Characterization" REST Journal on Emerging trends in Modelling and Manufacturing, 8(3), 2022, 138-144.

[23]. Sentis, Luis, and Oussama Khatib. "Control of free-floating humanoid robots through task prioritization." In Proceedings of the 2005 IEEE International Conference on Robotics and Automation, pp. 1718-1723. IEEE, 2005.

[24]. Ijspeert, Auke Jan, Jun Nakanishi, and Stefan Schaal. "Movement imitation with nonlinear dynamical systems in humanoid robots." In Proceedings 2002 IEEE International Conference on Robotics and Automation (Cat. No. 02CH37292), vol. 2, pp. 1398-1403. IEEE, 2002.

[25]. Oliveira, João Lobato, Gökhan Ince, Keisuke Nakamura, Kazuhiro Nakadai, Hiroshi G. Okuno, Fabien Gouyon, and Luís Paulo Reis. "Beat tracking for interactive dancing robots." International Journal of Humanoid Robotics 12, no. 04 (2015): 1550023.

[26]. Nakaoka, Shin'ichiro, Shizuko Hattori, Fumio Kanehiro, Shuuji Kajita, and Hirohisa Hirukawa. "Constraint-based dynamics simulator for humanoid robots with shock absorbing mechanisms." In 2007 IEEE/RSJ International Conference on Intelligent Robots and Systems, pp. 3641-3647. IEEE, 2007.

[27]. Pepito, Joseph Andrew, Hirokazu Ito, Feni Betriana, Tetsuya Tanioka, and Rozzano C. Locsin. "Intelligent humanoid robots expressing artificial humanlike empathy in nursing situations." Nursing Philosophy 21, no. 4 (2020): e12318.

[28]. Morris, Benjamin, Matthew J. Powell, and Aaron D. Ames. "Sufficient conditions for the lipschitz continuity of qp-based multi-objective control of humanoid robots." In 52nd IEEE Conference on Decision and Control, pp. 2920-2926. IEEE, 2013.

[29]. Torta, Elena, Franz Werner, David O. Johnson, James F. Juola, Raymond H. Cuijpers, Marco Bazzani, Johannes Oberzaucher, John Lemberger, Hadas Lewy, and Joseph Bregman. "Evaluation of a small socially-assistive humanoid robot in intelligent homes for the care of the elderly." Journal of Intelligent & Robotic Systems 76, no. 1 (2014): 57-71.

[30]. Tevatia, Gaurav, and Stefan Schaal. "Inverse kinematics for humanoid robots." In Proceedings 2000 ICRA. Millennium Conference. IEEE International Conference on Robotics and Automation. Symposia Proceedings (Cat. No. 00CH37065), vol. 1, pp. 294-299. IEEE, 2000.

[31]. Schaal, Stefan. "Is imitation learning the route to humanoid robots?." Trends in cognitive sciences 3, no. 6 (1999): 233-242.

[32]. Manjula Selvam, K. Janaki Priya, M. Ramachandran," A comprehensive Emergency Management using VIKOR MCDM Method" REST Journal on Banking, Accounting and Business, 1(1), 2022, 34-41.