

Humanoid Robot

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Abstract: *A humanoid robot is a robot simulating the human body. The design is for functional purposes, like interacting with human tools and environments, for the purpose of experimentation, or for other purposes. In general, humanoid robots have body parts like humans, though some humanoid robots may replicate only part of the body, for example, from the waist up. Some humanoid robots have heads designed to simulate human facial features such as eyes and mouths. Humanoid robots built to aesthetically simulate humans as Androids*

Keywords: Humanoid robot, Human facial features, Androids

I. INTRODUCTION

Robots are machines which work automatically to eliminate the need for human labour. Machines don't look like humans or carry out tasks in a way that is humanlike. Robotics and automation is the branch of engineering that deals with the creation, maintenance, and use of robots and building of new techniques. Robotics is the intersection of science, engineering and technology which produces machines, called robots. It replicates or substitutes for human actions. R2-D2, the Terminator is the robot which is reflected in the movies and WALL-E is the animated movie of a robot who over-exaggerated humanoid concepts of robots.

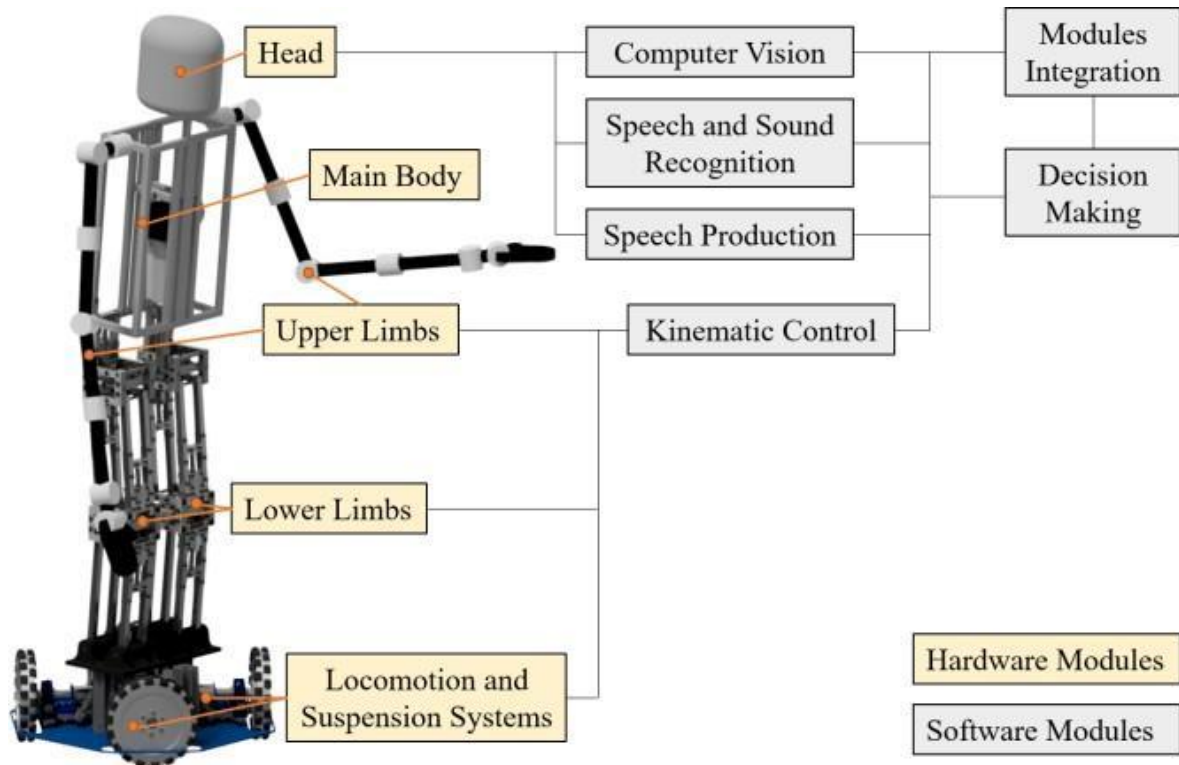
Robots are the machines that can be seen in games and movies and gaining intellectual and mechanical capabilities which don't put the possibility of a R2-D2-like machine out of reach in the future. Robots can also be defined as a programmable machine that carries variable tasks, while the term robotics describes the field of study focused on developing robots and designing new technology and automation. Each robot has a different level of automation that is used to develop new techniques. These levels range from human-controlled bots that carry out tasks to fully automated bots that perform tasks without any external tasks.

Humanoid robots are designed to look like humans and can operate like humans in the real world and can also relate to the surroundings, and the latest locomotion and AI technology is helping to speed up their development. Initially introduced by Toyota in 2017, the T-HR3 is a humanoid robot that acts like a human operator—like a real-world avatar. It is a movie full of friction and all robots seen in the movie are helped by editing machines.

II. METHOD OF EXECUTION

Working of a Robot Explained. Any robot is made up of three parts – Sensors, CPU, and Mechanical Actions. The sensory inputs that can be taken by the robot can be anything from smell, touch, visual differences, etc. like every human body has different parts like head, hand, leg and body same as that robot works. The head rotates the same as a human, but it can rotate at 360 degrees as we place the motors. 2 motors are placed at the right and left side of the arm and 2 motors at the down in the leg.

Though many real-world applications for humanoid robots are unexplored, their primary use is to demonstrate up-and-coming technologies that are designed to develop a robot. Examples of humanoid robots, such as the Honda Asimo, are introduced to the public to demonstrate new technological improvements in activities, such as walking, climbing, and playing an instrument.



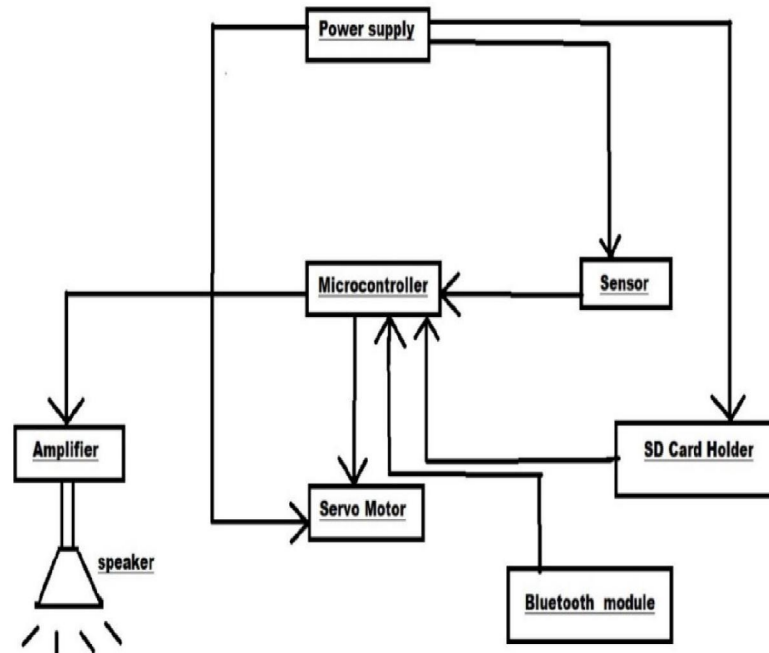
III. NEED OF THE SYSTEM

The humanoid robot mimics like the human body and body parts like humans resemble humans. And are designed to look and work like humans, that's why they are called humanoid robots. Gynoids are the popular female resembling robots. Advanced head design and other human-like facial features are used for several functional uses. Exceptionally it can interact and work in various environments for different environmental uses.

Advanced humanoid robots are also helpful in taking care of sick people, gathering rubbish from homes and offices and also used in many works that are capable of robots. It also gives the direction to move and help in the development of the economy. Humanoid robots are also used in Businesses and companies to replace human jobs and deliver work efficiency. In many commercial spaces, it is also used for entertainment purposes and performing tasks for entertainment.

Artificial intelligence used in humanoid robots is to replace the work of humans efficiently. In times of disaster, you need the best humanoid robots for rapid advancement and advanced engineering levels and in some cases, robots are very helpful, and, in some situations, robots are more efficient than humans. Artificial intelligence in humanoid robots is also used in the military for real-time application. They have several features like movement redundancy, flexibility and law enforcement. Humanoid robots working also help older people by taking their care and ensuring complete safety. Such robots also work in factories and can perform repetitive tasks without any errors. Robots are machines which can work more efficiently than humans.

IV. BLOCK DIAGRAM



V. CONCLUSION

The field of humanoid robotics is rapidly improving. Each humanoid robot represents an innovative idea in humanoid technological science. However, there is still a lot of scope for improvements and it is very difficult to distinguish which humanoid is performing better than the other. Perhaps all agree that a small step for robots could lead to one big leap for robotics in the next few years.

To achieve safe Human-Robot Interaction is one of the great challenges of robotics. It is required to design the systems that do not harm any one during operation. However, due to the lack of real world applications, there was very little research on how to assess and improve the safety of robots for tasks with direct human contact. The term safe was used to highlight dependable robotic components, for that, failure rate has to be reduced and reliability to be increased.

REFERENCES

- [1]. E. Broadbent, Interactions with robots: The truths we reveal about ourselves, *Annu. Rev. Psychol.* 68 (2017) 627–652.
- [2]. C. Edwards, A. Edwards, J. Kim, P. R. Spence, M. de Graaf, S. Nah and A. Rosenthal-von der Pütten, Human-machine communication: What does/could communication science contribute to HRI?, in *14th ACM/IEEE Int. Conf. Human-Robot Interaction (HRI)*, Daegu, Korea (South), 2019, pp. 673–674, doi: 10.1109/HRI.2019.8673138.
- [3]. J. F. Hoorn, The robot brain server, design of a human-artificial systems partnership, in *Intelligent Human Systems Integration*, eds. W. Karwowski and T. Ahram, *Advances in Intelligent Systems and Computing*, Vol. 722 (Springer, Berlin, Heidelberg, 2018), pp. 531–536, doi: 10.1007/978-3-319-73888-883.
- [4]. M. S. Kim, J. Sur and L. Gong, Humans and humanoid social robots in communication contexts, *AI Soc.* 24(4) (2009) 317–325.
- [5]. Theory of Robot Communication: II. Befriending a Robot Over Time Johan F. Hoorn, *International Journal of Humanoid Robotics*, 2021