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Voice And Remote Control Humanoid Robo (ELECTROBO) Using Arduino Rev3

Abhilasha Jain[1] and Tarun Kumar[2]
Department Of electronics and Communication Engineering,
Meerut Institute of Engineering Technology, Meerut, Uttar Pradesh, India.
Abhilasha.Jain@miet.ac.in [1], Tarun.kumar.ece.2022@miet.ac.in [2]

Abstract: *A Humanoid Robo is type of machine, technology which help to convert hard work into easy way under a specific time interval.*
A robot which can help us in many fields like carrying items, worlds with more accuracy in lesser time in every kind of works.
A humanoid robo have various applications such as Healthcare, Agriculture, Education, Aeronautical, Foods, Space Exploration, Service industries, etc.
This paper reviews the current state of humanoid robot, highlights the key trends and developments in the field industries.
We discuss the design a New Humanoid Robot also called ELECTROBO. In this Project ELECTROBO sense the human by IR sensor automatically and follow human and obstacles. A robot that can help us in hospital or bringing medical items in any emergency case, situations or critical conditions we will be move helpful for doctor in critical conditions, situations. The potential of this ELECTROBO to improve our daily live and provides a foundation for future research and development fields. These ELECTROBO are designed to mimic human movements, appearance and interactions allowing them to perform tasks in a human like manner.

Keywords: Voice And Remote Control Humanoid Robo (ELECTROBO) Using Arduino Rev3

I. INTRODUCTION

A humanoid Robot is a type of machine which help the human in their work and also present hard work in a easy format with a give time interval. It's a advance technology tools that can be used to doing works, carry loads, also helpful in research industries, development factor, Economic growth etc. A Humanoid Robot are implements, design to interact and resemble with humans, living creatures, or leaving beings. A humanoid Robot have various applications such as Healthcare, Education, Agriculture, Aeronautical, Defence, Space exploration, Research etc. It also help to improve human- robot interaction, enhance efficiency, and productivity, and increase safety and security.

A humanoid Robot is a type of human body structure is designed by implementing electrical, robotics, electronics, mechanics tools, devices and gadgets. Humanoid Robots are designed to resemble and interact with humans. It is a Artificial Intelligence, Machine Learning tools. It is also called a ELECTROBO it means it is a combination of three main fields industries are mechanical, Electronics, and Robotics. The three main industries design a machine which known as Robot to remove man power, convert hard work into easy format, or a way. It is also refer to an electromechanical system designed to, mimic- like movements and interactions. In most Industrial areas Humanoid Robot have at least the Seven main Electronics, Mechanics Parts such as Sensors, Effectors, Integrated Circuits, Controllers, Arms, Legs, Wire Connections. This robot combines multiple technologies- embedded Systems, automation, Sensors, Actuators and Wireless Communication- to demonstrate a low cost, effectively helper robot platform. Humanoid Robots are poised to revolutionize various industries and aspects of our lives, making a significant impact on society

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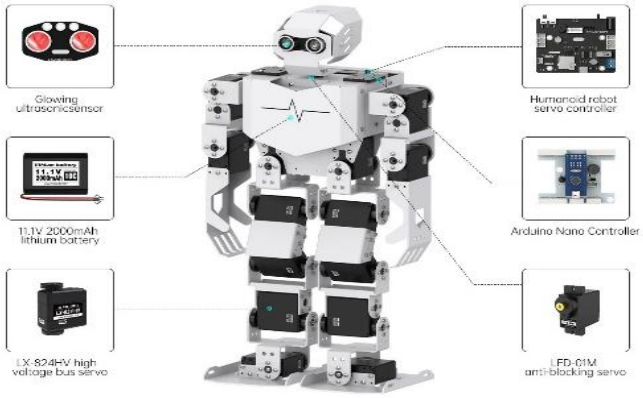

II. HISTORY OF ROBOTS

Robotics has a rich history, from its early beginnings to the current advancements in Artificial Intelligence and Machine learnings.

In 1921 the term "ROBOT" is given by the Czech writer Karel Capek. The first used of the Robot is for playing purpose which also known as R.U.R or "Rossum's Universal Robots", its main aim to kill the humans, or seize the human position.

Early Beginnings (1950s- 1970s)

George Devol's Unimate (1955): The first industrial robot, patented by George Devol, marked the beginning of robotics. George Devol design the first Programmable robot called UNIMATE for "Universal Automation", its is formed by a "Unimation" Robot company.

Shakey the Robot (1969-70): Developed at SRI international, Shakey was the first mobile robot that could reason and interact with its environment.

Advancements (1970s- 1980s)

Industrial Robotics: Robots began to be used in manufacturing, particularly in the automative industry.

Robotics Research: The field of robotics research expanded, with the first institute MIT, Standford university, etc, leading the way.

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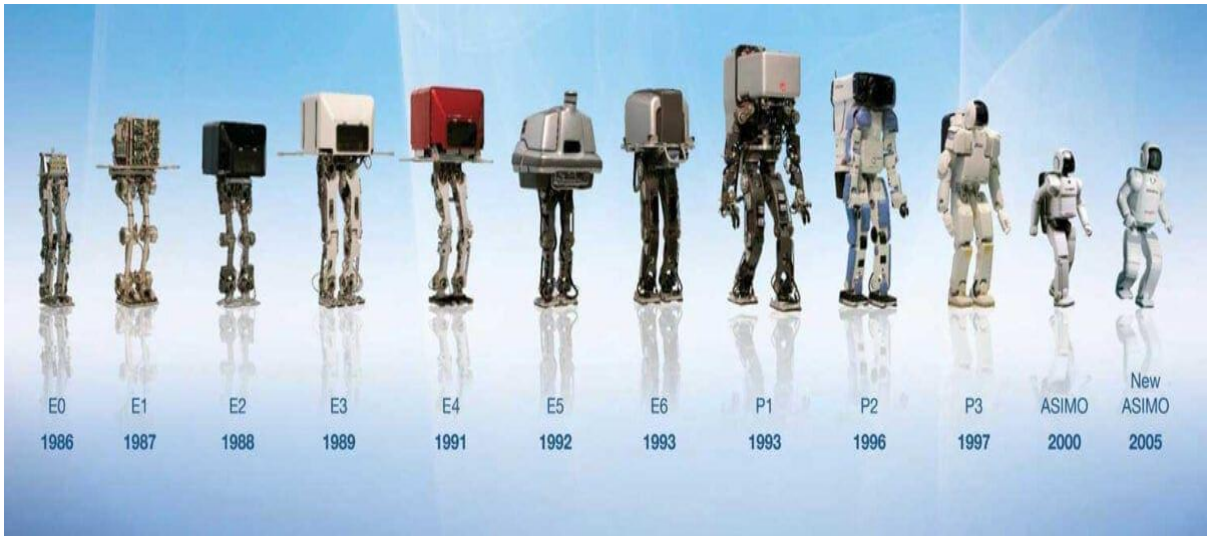
Modern Robotics (1990s- 2000s)

Autonomous Vehicles: The development of autonomous vehicles, such as the DARPA Grand challenge, pushed the boundaries of robotics.

Human Robots: Robots like Honda's ASIMO and Sony's QRIO showcased advanced bipedal locomotion and human-like interaction. Sony released the first Aibo robotic dog.

Honda created the P3 for creating the ASIMO. The P3 was Honda's first completely autonomous humanoid robot.



Current Advancements (2010s-2025s/ present)

Artificial Intelligence (AI): The integration of AI and machine learning has enabled robots to learn from experience, adapt to new situation, and interact with humans more effectively.

Robotics in Health Care: Robots are being used in healthcare for surgery, patient care, nursuing, medication and rehabilitation, adoption. Robots are being developed for various service industries, such as retail, logistics, and hospitality.

KIST (2005)- The Korean Institute of science and Technology design HUBO robot the specialisation of this robot is the face of robot is an Albert Einstein face. This robot is linked to a microcontroller, CPU with high speed wireless connection. They perform all thinking, learning, human activities.

III. COMPONENTS

To design the **ELECTROBO** project, some components or instruments are used such as: Arduino Uno Rev3 (Microcontroller), Bluetooth HC05 (Wireless Communication Module), L298N Motor Driver (Integrated Circuit Module- Control Automation Process), Gear Motors (Electric motor with Gear Box), Lithium-Ion Battery (Energy Source), Jumper Wires (Connection tool), Sun Board Sheet (Body Posture),Led (Signal indicator), Glue stick (Joint source), etc.

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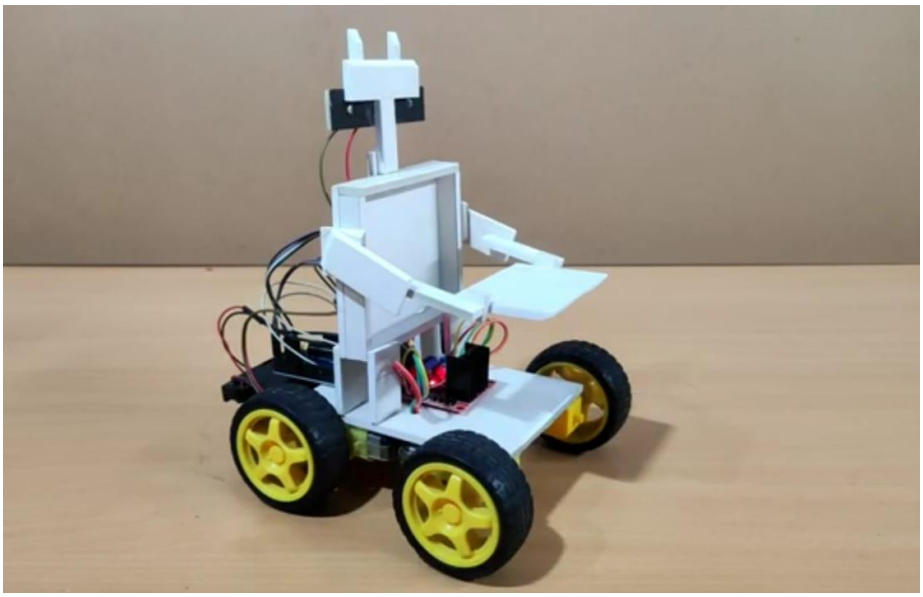

ELECTROBO-

Advantages of ELECTROBO-

1.High Safety and Security
2. High Operatimg Speed
3.Time Consuming
4. Multiple working at a time or a single command
5. Advance technology, skills
6. High Consistency

Disadvantages of ELECTROBO-

1.More power consumption
2.More impact Human Interaction
3. Environment Affected
4. Hight cost
5.Cyber security Issues.

Applications of ELECTROBO-

1.Used in Agricultural industries
2. Used in Medical fields
3. Used as Safety- Security Appliances
4. Education Industry
5. Resarch field
6. Space learning
7. Used as an AI Tools

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IV. FUTURE SCOPE OF ARDUINO VOICE-CONTROLLED HUMANOID HELPING ROBOT (ELECTROBO)

1. Advanced AI Integration: Incorporating more advanced AI algorithms to enhance decision-making and autonomy.

2. Improved Sensor Integration: Adding more sensors to enhance perception and interaction with the environment.

3. Enhanced Voice Recognition: Improving voice recognition capabilities to handle complex commands and accents.

4. Increased Autonomy: Developing more advanced autonomy features to enable the robot to make decisions independently.

5. Multi-Robot Collaboration: Exploring the potential for multiple robots to collaborate and work together.

6. Integration with Smart Home Systems: Integrating the robot with smart home systems to enhance functionality and automation.

7. Emotional Intelligence: Developing emotional intelligence in the robot to better understand and respond to human emotions.

8. Expanded Applications: Exploring new applications and industries for the robot, such as healthcare, education, and service industries.

V. CONCLUSION

"In conclusion, the development of voice- controlled humanoid robot has the potential to revolutionize various industries, including healthcare, service and security.

This robot to understand and respond to voice commands enables it to assist human in more natural and intuitive way. With its application in patient care, assistance and surveillance, this robot can improve efficiency, accuracy and safety in various sectors. With its structure, cutting-edge technology and design, this robot is not just a machine- it's a partner, a caregiver, and a guardian.

As the technology continues to advance, the possibilities for humanoid robots will expand, enabling them to play an important role in upcoming future".

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