Study on Evolution of Robotic Generation

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Abstract: - **This paper gives detailed information about how Robot can replace the human being, all most in every field. This paper will also give a details technical and non-technical information about how Robots can work as human. Even how it will compete with human. This technology deals with automated machines that can take the place of human's in dangerous environment or manufacturing processes or cognition. In future a Robot can be implanted in such a way that one day it will be the most powerful and smarter creature in the world as one robot can replace ten human beings.**

Key words— **A.I- artificial intelligence, NN- neural network, CNN- conversation neuron network, RNN- recurrent neural network, machine learning, NPL-natural lamguage processing, Robot, ROS-robot operating system, symbolic learning, image processing Robot, deep learning Robotics, computer vision, speech recgonization, object recgonization**

I. INTRODUCTION

A robot is a machine-especially one that is programmable by a computer capable of carrying a complex series of action automatically and the branch of technology which deals with the operation, sensory feedback, and information processing is robotics. The term comes from a Czech word, Robota, meaning "forced labor". [9] Experts are still in research to build better robot which are smarter. Scientists are in the study of the whole working of human brain and then by the principle of human brain we can build smart robots. There is no need to take the exact replica of human brain to build artificial brain as it can be done by retrieving some principles of it. This can be given by an example of how scientists have built an airplane which is the principle extracted from bird flying in air and through artificial intelligence they built airplane which is regularly used in the present generation. Ray Kurzweil, google director of engineering says that artificial intelligence reach human intelligence by 2029. Experts of search engine say that at 2045 artificial intelligence will be the most intelligent species on planet. Scientists have often had a talk about 'singularity' as when the AI will become smarter than humans are most intelligent creature in the word.

Fig1.1: Evolution of Robot

1.2 WHAT IS AI

AI is a broad branch of computer science. Goal of AI is to create system that can function intelligently as humans are recognized. This field of speech recognition much of speech recognition is statistically based hence it's called statistical learning. Humans write and read text in a language, this is the field of (NLP)natural language processing. Humans can see with their eyes and process what they see this is the field of computer vision, field under the symbolic way for computer to process information. Humans recognize the science around them through their eyes which creates images of that world, this field of image processing which even through is not directly related to AI is required for computer vision. Humans can understand their environment and move around fluidly this is the field of Robotics. Humans have the ability to see patterns such as grouping of like objects this is a field of pattern reorganization. Machines are even better at pattern recognition because they can use more data and dimensions of data this is a field of machine learning.
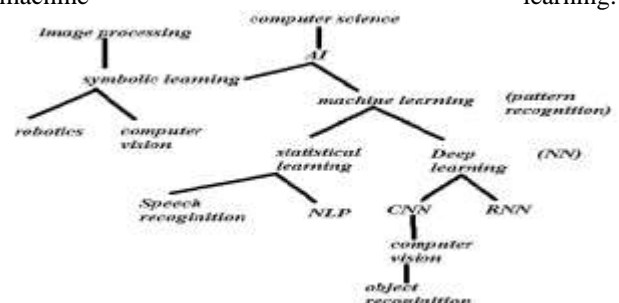
Fig 1.2: Tree structure of AI

1.3 HOW AI UNDERSTANDS HUMAN BRAIN

Human brain is a network of neurons. We use this to learn the things and if we can replicate the structure and function of human brain we might not be able to get cognitive capabilities in machines. This is a field of the neural network (NN). These networks are more complex and deep we use those to learn complex things which we can say it as a field of deep learning. There are different techniques to replicate what human brain does and there is a network to scan the images from left to right or top to bottom, which is a conversation neuron network (CNN). It is used to recognize objects in a scene and this is how computer vision fits in object recognition to be accomplished. Through AI, humans can remember the past like what you had for dinner last night. When at least most of you can get a neural network to remember the limited past, this is a recurrent neural network (RNN) as we can see there are two ways the eye works, one is symbolic based and other is databased. For the databased side called machine learning, we need to feed the machine a lots of data before it can learn. For example, if we have lots of data for scales versus advertising spent, you can plot that data to see some kind of patterns. If the machine can learn these patterns, then it can make predictions based on what it has learnt while one or two or even three dimensions is easy for humans to understand and learn. Machine can learn in many more dimensions like even hundreds or thousands, that is why machines can look at lot of high dimensional data and determining patterns. Once it learns these patterns, it can make predictions that human can't even conclose to. We can use all these machine learning techniques to learn one or two things like classification and prediction. There is another way to think about learning algorithms used for AI. If you train an algorithm with data that also contains the answer which is called as supervised learning. For example: when you train a machine to recognize your friends by name, you will need to identify them for the computer and if you train an algorithm, where you want the machine to figure out the patterns then its unsupervised learning.

1.4 IMPLEMENTATION

There are several platforms to develop a robot. One of the best and open source operating system is ROS:
The Robot Operating System (ROS) is a flexible framework for writing robot software. It is a collection of tools, libraries, and conventions that aim to simplify the task of creating complex and robust robot behavior across a wide variety of robotic platforms.

Why? Because creating truly robust, general-purpose robot software is hard. From the robot's perspective, problems that seem trivial to humans often vary wildly between instances of tasks and environments. Dealing with these variations is so hard that no single individual, laboratory, or institution can hope to do it on their own.
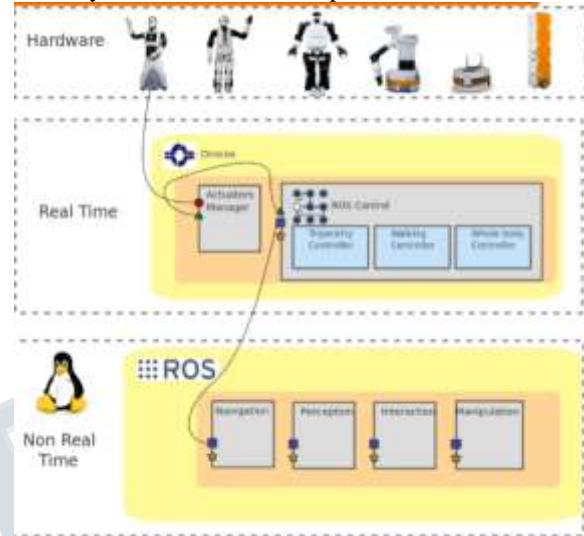
Fig1.3: Control archicture of ROS

ADVANTAGES OF USING ROBOT

• Robots can be used in an area where human cannot go, like on planet to explore the space, they can be sent to the deep sea or war-zones and mining purpose.
• They can work at any place for 24/7 without any salary and food.
• Robots will never get bored of doing work repeatedly. Every time it will perform the task in very short period of time.
• Most of the Robots are automatic, they can move work without any of human interface.
• They can be programmed to manage themselves so there is no work for human.

DISADVANTAGES OF USING ROBOT

• Robot needs a power supply; they need to be maintained to keep them running.
• Robots are expensive.
• Robots can work on behalf of many employees then it leads to unemployment.
• Robots are not intelligent or sentient; they can never improve the result of their jobs outside of their predefined programming.

II. CONCLUSION

Artificial intelligence and technology has become one part of life as they interest and surprise us with new innovative ideas. Today we find the use of robotic technology has made an immediate impact on the world in several ways. Robotic technology is evolving rapidly in the 21st century. we use robots because they are faster than individuals at carrying out tasks as they replicate the principle of human brain. With the advances in robotic technology we have found ways to make our life more convenient with increased product output and research. As scientists says that robots will be the most important species in the world. At the end, we've been in research through the introduction, AI definition, implementation, and study on how AI understands human brain, applications, advantages and disadvantages. this is not the end of AI, there is more to come in future and who knows the what artificial can do in future, maybe it will be the whole society of robots.

III. FUTURE WORK

In future Robots can be implemented to better understand the human brain. The Robots can be implemented to have the human feeling and it should have capability to feel and react.

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