# Artificial Noesis for Human and Robot Interaction

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## ABSTRACT

The purpose of this study is to investigate the interaction between human and robot in our society. Human robot interaction is a multidisciplinary area of research interaction. It is a multidisciplinary research comprising of the technological abilities of robots. The design of robot embodiment and geographical studies and lab based research who are human participants with robots in a controlled environment. Therefore the discipline involved with human robot interaction or computer science are Human computer interaction, artificial intelligence, psychology, neuroscience, machine learning and many more. The goal of most HRI research is to promote the uptake of robots in our daily life. Across different environment that means in future human will interact with robots as much as with other human. This extent of social gives birth to many interesting problem that researcher are trying to solve. HRI researcher name you are investigating what are the optimal behaviors and appropriate physical apperance of the robots. The method that is used for understanding the interaction of human and robots is the "Multimodel Human robot interaction system". By this model we come to know how the user interact with the robot like by using buttons, audio, visual, haptic etc. and controller unit used for tracking , detection,image processing etc. and input will be as our face expression, hand gesture, head movement, touch, thought and many more. The cyber physical agent like robotic arm, a rover, a drone etc work in our environment home, lab or outdoors. And by this study we definitely comes to know that the HRI has the a great place in our life that makes our life so easy, but there are some cons also of the HRI that we will know during this study. According to some researcher, in future robots will interact with us as a way as the human do with other human.

**Keywords: Artificial Noesis, Human and Robot Interaction**

## INTRODUCTION

Robots are imagination of people for ages. We can see robot making an appearance in The Bible or Jewish Folkcore and latest science fiction movies. So what is your phone is a robot, your computer is smart enough to call a robot for us. Robot is a computer with an embodiment which is capable to do something in physical world. Robot have been in factories doing repetitive task since many decades ago. However state-of-the-art technology allows robot of today to perform many more advanced roles, just look at the **Roomba** one of many robot vacuum cleaner not very expensive. This is able to compute cleaning duties around the house. In addition the **Roomba** has shown to interact in human and create engagement with its user.

The human being and robot interaction makes a great challenge for AI (Artificial intelligence). For being interactive HRI (Human and Robot interaction) should have:-

➢ Understanding, designing and evaluating robotic system by or with humans.
➢ Investigating the interaction between the human being and the robots.
➢ Combine all the feature from Human, computer Interaction, Artificial Intelligence (AI)and Robotics, Natural language understanding and Social sciences.

### Human Robot Interaction System
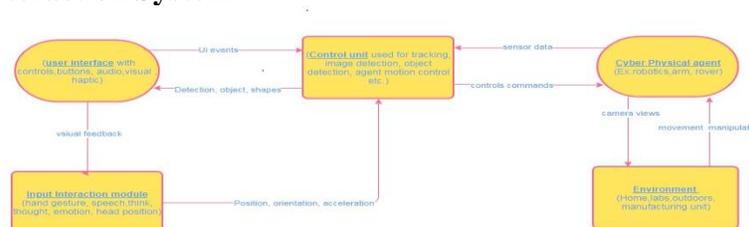
This is the systematic frame that can be applied to the menu of Human Robot Interaction (HRI) scenario to compare different user interaction (UI) and modalities of interaction. Here the user interface are like button, audio, visual hepatics. Processing unit or the controller are used for object detection, tracking, for image processing and for operation interaction. Cyber-physical agent are robotic arm, a drone, a Rover etc.that also interact with the environment.

**Human and robots friendly interaction**

Robots are the creativity of researchers that are used in critical domains like rescue operations, military battles, bomb detection, for space scientific exploration, hospitals and many more fields. There are many types of robots in their shapes and sizes. Every robot has different looks like machine humanoid and geminoid.

Humanoids robots are designed to look like a human for intuitive collaboration, and latest locomotion and artificial intelligence is helping to speed up their development. Humanoid robots are used for research work and space, a personal assistant, caregiving education, entertainment, manufacturing and maintenance, public relationship and many more.

According to Daria Merkusheva editor at ASME(The American society of mechanical engineers). Before the covid-19 and the economic uncertainty, Statistics Market Research Consulting expected that the global humanoid robot market would reach $ 13 billion by 2026, while future behavior is now unclear. And Chinese companies were rushing to deploy robots and automation technology as doctor were grappling with covid-19.

**Robots role in our society:-**

➢ In the period of covid-19 as the virus spreads all over the world, the robot are being deployed in many countries. Some robots help to relieve tired nurses in the hospitals, do basic cleaning and deliveries and other can help in warehousing.

➢ Doordash a food delivery company that has begun food delivery using robots to drop of food orders in northern California.

➢ Perhaps the most recognizable face of humanoids is that of **Sophia**, a social humanoid developed by Hong-kong based **Hanson Robotics**. In 2020 the AI powered 4 year old robot is going to continue her role as a robotic ambassador helping to advance research into robotic and HRI. Sofia, a humanoid robot can move, talk, show some emotions, draw and Sing taught by humans.

**Digital humanoids:-**

There are different kind of robots some are cute others are scary and exact replicas with the japanese researchers such as Geminoid. So what should a robot look like and how much to behave the Uncanny valley provide us with some answers in 1970. Japanese scientist Masahiro Mori proposed a theoretical model linking robot behaviour with robot appearance. Mori suggested that the robots that look and behave almost like human have a tendency to cause a version in human think of a Zombie. Many believe this repulsion is caused by fear of death. The Uncanny Valley is primary hypothetical and scientific evidence as both supported and negating it. However it does provide theoretical and underpinning onto which Human Robot Interaction(HRI) research can be built. We have been involved in exciting research project within the area of human robot interaction. We have created a language **ROILA** Stands for **Robot Interaction Language** is meant to be used by humans robots. In another study look at the behavioral and social skills of robots and determine if a human can reciprocate what positive and negative gestures by the robot apparently.We are also looking into the contradiction emerging between fiction and real robots. We argue that anthropomorphism is preferred more in fiction robot than real robot.

Digital human look like human but are entirely virtual, Example is Samsung Technology and Advanced Research (STAR) Labs' Neons , AI powered being with unique personalities and

look. Geminoid **DK** is realistic Android nearly indistinguishable from a real human which was constructed to look exactly like **Associate professor Henrik of Alberg university** in **Denmark**. If you're wondering why on Earth someone would want an exact robotic double of themselves, besides being TOTALLY AND COMPLETELY AWESOME, the Geminoid is going to be used for studying human-robot interaction, in particular people's emotional responses when they face an android representing another person. Prof. Scharfe wants to find out if the robot can transmit a person's "presence" to a remote location and whether cultural differences in people's acceptance of robots make a difference.

## How human robot co-ordinate:-

A lot of work in the field of HRI has looked at how human being and robot can better collaborate. The most common approach for programming social cue in robots is the first study human to human behavior mechanism and then transfer the learning.Example co-ordinate mechanism in Human robot co-ordination (HRS) are based on work in **neuro sciences.**

## Convergence and divergence of anthropomorphic robot in society:-

The artificial intelligence enable robots.pet.moflin with emotional capabilities and an ability to learn and won the best of innovation award in robotics at the **Consumer Electronics show 2021.** Anthropomorphism in robots have become a warm topic in these days but there are some pros and cons of implications.

## Pros:-

In a recent study we find that the human brain react in the same way while making eye contact with humanoid robot. And another human, making a case for producing service robot with eyes. When the robot start their work along with humans in warehouses and manufacturing floors. The eye feature will ensure a smooth HRI. And now robot will soon starts working in public places. Like **moflin** or many more robots make way in our homes and social robot will work as an antidote for our loneliness.

## Cons and threat of HRI:-

We observed the robots in post research as the the next milestone in cultural simulation. And the research stigmatized the use of anthropomorphism to create social bonds between humans and robots. Implicit to this criticism is a conviction that anthropomorphic projections corresponds to false beliefs. And such type of beliefs can have serious consequences. Imagine that a child start believing that the robot caretakers is actually cares for her.

And at last but not the least, people's likeability of a robot increases the more human-like it becomes, but it comes with a caveat. Human get uncomfortable if the similarity is too much. this phenomenon is called **" Uncanny Valley"** .

## Conclusion:-

At the last we come to know the answer of a question that is **"what is next kind of robot will we have in the future?"** At the year of 2050 most vehicles will driven by the autonomous computer and Robot will be exist in socety and common places like offices, School, homes and hospitals etc. The distinction on a a mental or physical level between human and robot is almost negligible. Gone are the days when robot would only mean a weighted arm that does mass manufacturing of product in the industry. According to some Japanese scientist in the year 2050 a robot soccer team should be able to play against human team. So it is this vision of the future sound intimidating or unrealistic or there are fascinating opportunities provided by robots to help human. Current research in HRI is going a long way in making this vision of the future eventually come true. But what is HRI according to Michael Goodrich and Allen Schultz is a field of study dedicated to understanding, designing and evaluating robot system for use by or with human. So everyone has there own views according to there prospective.

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