# Robocom: A Concept Leading to a New Helping Hand

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**Abstract**—*Abstract: In present scenario, humans want to have a quick work done in milliseconds and even in microseconds which turned Robotic Field to come up with more advancement. Likewise when a person wants to have a work done by sitting on ones sit, he approaches to a worker or maid but with leading to more development in field of artificial intelligence and mechanical support robots that have really a great impression on people's minds. In the same way, I introduce a robot that can efficiently do human household work plus office work with new ability to eliminate the use of computers and laptops via its own awesome designing which I named as ROBOCOM. ROBOCOM which can be defined as a machine that enables every work of human plus computer to tackle with. In Simple words, ROBOCOM is formed by the combination of a Robot and a Computer. Moreover, the main purpose of writing this research is to give a robot as in the form of ROBOTIC COMPUTER (ROBCOM) to today modern world which will greatly act as a helping hand to anyone.*

## 1. INTRODUCTION

A ROBOCOM is actually can be defined as a machine or a humanoid that is based upon the principles of Artificial Intelligence and Robotics. This will surely help the user to have all the computer's work by just ordering on only sitting on the chair.

Moreover, A Humanoid is something that has same appearance same as a simple Human Being, which commonly based upon the interaction between devices put up in the humanoid and the commands that the user orders to it. The Concept of Artificial Intelligence here will greatly help since the interaction will also can take place between devices or two ROBOCOMs.

## 2. LITERATURE SURVEY

By observing and studying the earlier work done under the field of humanoid I come across some humanoid theories that were put up by many authors in fictions like- In 1978, Harry Jerison at American Psychological Association gave the concept of Dinosaur Humanoid i.e. Dinosauroid using dinosaur intelligence [1]. Also, with leading to the theory of jerison, in a presentation one gave the concept of similar like humanoid.

And, by the continuation of the theories, many films and books were written on humanoid which greatly made curious inventors to make a new humanoid in real world.

Like, from late c.250 BC the deep history came up by Lie Ze who described automaton and taking the history to recent world. Such as- Greek Mathematician gave a machine that would pour wine to guests, which was the first step towards the development of humanoid. With addition to that, in 1495, Leonardo's Robot took place of previous humanoid works which greatly impacted the public and by 1927, real wireless gynoid (female) humanoid took place in public which was through films and lasted for many years in audience minds. Then with that, in 1973, a humanoid named Wabot-1 was built which was made in Tokyo in Waseda University. This Wabot-1 was able to talk with a Japanese and measure distances plus directions by the use of artificial ears, eyes and mouth. Then by 1980, Marc Raibert established MIT leg Labs which was dedicated for the study of locomotion and dynamic legged robots. And, by then Wabot-2 took place of Wabot-1 and in 1986 the revolution takes place and Honda made seven biped robots lasted for 1993 series named as E0 to E6. With increasing interest of many engineers and scientists, there came many humanoids namely from 1980s to 2009 namely as *Anthropomorphic robots* [2] that would have artificial respiratory system to stimulate breathing and sweating, *Prototype 1* developed by Honda which would walk by the bundles of wire connected, *Wabian* given by Waseda University, *Saika* a light-size, low cost humanoid robot developed by Tokyo, *HOAP-1* by Fujitsu with its successors *HOAP-2* and *HOAP-3, Actroid* by Osaka University and with late 2005, Mitsubishi heavy Industries introduced first domestic robot called *Wakamaru* which was put forward only to provide companionship to Disabled persons [3]. And, by the increasing development open source programmable robots were in demand and first of that kind was provided by Aldebaran Robotics in France which had triggered its use in research platforms and for education in robotic field named as *NEO*. Then a ping-pong robot introduced named as TOPIO as shown in Fig. [1] developed by TOSY Robotics JSC. Then, in 2008, by the collaboration of MIT Media labs, UMass Amherst and Meka Robotics there comes first mobile,

dexterous and social robot named "Nexi" which had made its public debut as one of TIME Magazine's top inventions of the year which had taken place of various official public spaces. Then in United States, the first open source robot "Salvius" was created. Moreover, the work in field of Robotics especially in Humanoid was such took place that now also many generations humanoid are built up and are still under progress to fulfil the audience thirst.



**Fig. [1]: A Humanoid "TOPIO".**

As from above figure, humanoid made by Tosy Robotics Company for their work has designed same as a human being with artificial face and whole metallic or aluminum body.

Now, with latest development, China plus japan has many humanoids for their companies. Also, the companies that are recently developing humanoids for public are as *AMS AG, Boston Dynamics, Google, Softbank Robotic* and many more. In addition, NASA had planned to launch their new *Valkyrie Robots* to Mars.

## 3. METHODOLOGY

Before undergoing actual deep study of methodology, let's discuss the actual designing and inner part of previous humanoids made as explained below:

First of all, let's discuss external designing part that includes architecture of humanoid with either a polymorph material or aluminum or even can have metallic part too. However, the designing can either be take place in some designing softwares like RobotCub, Auto CAD, 3D Stimulation Tool etc. Likewise, the actual designing includes:

- Artificial legs, arms, face, joints, toys stuff, wheels, motors etc. if added.

Then, with basis stage we come across electronic components require as:

- *Microcontroller*: It may be defined as a small computer embedded on a single integrated circuit having a processor core, memory and input/output peripherals. Here, we use AVR ATtiny2313 (This is cheap and simple

to use by embedding various commands used in humanoid functioning).

- *Personal Computer (PC)*: PC can also be used instead of small microcontroller because here we are eliminating small projects and hence, concentrating on large humanoid.

- *Inlets/outlets*: Various components like inserting and taking out keyboards, screens etc. require a space or a cutoff in the body wherever needed.

- *Capacitors*: Obviously, there will be a need to store energy and charge it simultaneously through which robot gets energy and batteries on a part will function plus motors too.

- *IR-LED*: Infrared-Light Emitting Diode will also require in its own proper place. Like, in eyes camera there can be IR-LEDs denoting the image recognition part.

- *IR Transmitter and receiver:* Infrared transmitter and receiver can be used in obstacle detection, door interruption and much more which is followed by two methods namely Retro-Reflective method and through-beam method.

- *Power Supply*: In consideration of power supply, we always need a power from which all the chains, belts and motors will work and function. Here, we will consider using SMPS (Switch mode Power) which is a better choice over an Adapter.

- *Connectors*: Obviously, connectors is the primary component that we all have a requirement while dealing with humanoid.

- *Relay*: Relay is an electronic component that works on magnetic field that triggers when given an input electrical signal on its 2-input terminals.

- *Sensors*: Sensors is a device that work on physical quantity application. Here, we will be using temperature, pressure, Light, Color sensors etc.

- *Motors*: DC motors or stepper motor or servo motor will be using for locomotion and other walking commands.

- *Wireless Application*: Now, here comes that how we can apply wireless control over humanoid and that can be done by using RF transmitters and Receivers on which we can apply speech recognition.

Secondly, now it comes to the actual methodology which I have to illustrate and explain in this paper. This starts with the external designing as shown in Fig. [2].
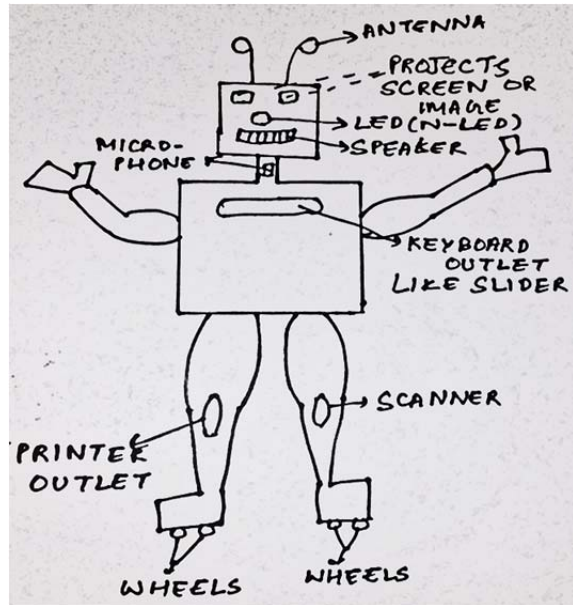
**Fig. [2]: Simple ROBOCOM Design**

After observing the above figure, let's now understand the inner circuit components and all devices that are inserted and packed in humanoid artificial body.

- *Antenna*: Antenna works when wireless connection is needed, it can be either by infrared, Wi-Fi etc.

- *Eyes*: Eyes here works like projector and also like camera i.e. when screen is asked to project or image recognition is required.

- *Nose*: Here, nose work like simple LED that ONs when the Robocom is activated or OFFs when it is deactivated and blinking can be done when processing of something is in progress.

- *Mouth*: Mouth works like a simple speaker as we encounter in output peripheral.

- *Throat*: Throat here works like microphone that recognizes user commands and process on it.

- *Chest*: Here chest consists of slider that slides out keyboard and helps user to type text.

- *Legs*: Here, legs consists printer outlet and scanner inlet which will work when user wants a print of file from system storage and if want to scan some documents.

- *Wheels*: Here, wheels are responsible for whole body balance and locomotion of Robocom.

Secondly, motors, relays, power supply and all essential chains, belts all components that are listed earlier in starting of methodology are also included.

In Addition, now it comes to the functioning i.e. how it will work according to the combination of PC and robotic artificial

intelligence. This starts with the primary part i.e. there are certain softwares that embedded on its PC which will work according to the calling period by user like speech recognition will always be on and image recognition plus obstacle detection, light emission, projection of image etc. as developer need to add.

For ex: when user starts its power supply, Robocom will start processing, initially it will activate certain motors so that the locomotion of Robocom starts and when user orders certain commands likewise shown below:

- OPEN KEYBOARD: Robocom will slide keyboard outwards from its chest as shown in Fig. above.

- OPEN SCREEN: Robocom will then project screen of PC inbuilt in it through its eyes.

- TAKE "filename" PRINT: Robocom will process print and will out give printed page from its leg outlet.

And many more as user choose to operate like on. However, the list of softwares that are included is as shown:

- *Speech Recognition*: This will activate when user order some command to Robocom via its throat. This is same like "OK GOOGLE".

- *Image Recognition*: This will activate when user demands some object to pick up, throw etc. locomotion commands to Robocom.

And, with advancement of Robocom one can insert many softwares to cope up with more challenges and will definitely help one to work quickly and efficiently.

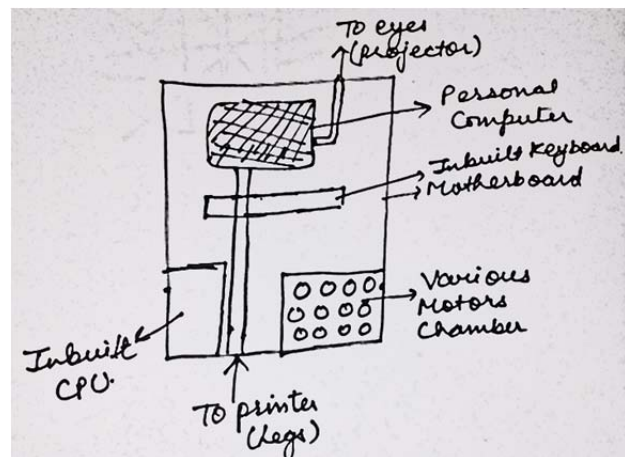Moreover, the basic inner circuit idea can be seen as below shown in Fig. [3].



**Fig. [3]: Basic circuit of ROBOCOM.**

The labeling done in above Fig. can be tackled as explained below:

- *PC*: Personal computer embedded is the important class that can be taken in consideration which will be the heart of Robocom. In this, various softwares will be there which will be called according to the user commands. Like- when user wants to recognize his/her voice, then automatically microphone i.e. throat will activate and commands will send to CPU as shown in Fig. and then action will take place.

- *Motor Chamber*: Basically, this chamber will include interaction of various locomotive motors and power supply which will help wheels i.e. legs to move and hands to move for picking up objects.

So at complete Robocom will be somewhat like the idea and methodology illustrated above.

## 4. RESULTS AND DISCUSSIONS

With the extent of this concept of Robocom, one can undergo any difficult task to be done in none seconds efficiently. However, one can use Robocom officially as well as domestically to complete all those PC's works that are done with enough concentration. This will also eliminate the use of computers and laptops since it helps in doing all those work like printing, scanning, projecting etc. These all work would be done by a humanoid as explained above. This can also be a part of government sector since it will help to cope up with the storing of large databases.

## 5. CONCLUSIONS

So, at the conclusion part, we can conclude that Robocom can be a part of individual's supervision plus community group. Robocom if made with great investment and with huge contribution of various programs will surely lead to useful humanoid which will certainly will work like robot as well as a computer.

## 6. FUTURE WORK

This research paper illustrates one of the application of humanoid in the field of robotics and artificial intelligence. One can also include various functions that may differ simple humanoid from this like adding sixth sense technology, holography and also can be made like ironman suit i.e. adding an operating system own made with awesome programs.

In Addition, one can include whole holography screen robot if one need to add.

## REFERENCES

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