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HUMAN ROBOT CO – WORKING IN HOSPITAL INDUSTRY: A STUDY CONDUCTED ON THE HUMAN ROBOT CO – WORKING AND THEIR INCREASING IMPORTANCE, WITH REFERENCE TO THE HOSPITAL INDUSTRIES

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ABSTRACT

It is noticed that there is an in-built fear in humans that certainly will replace manpower in workplaces would be taken over to a large extent by the robots. But the only issue that is found is that they don't know how to programme them, in order to cover this gap a programme is being developed by introducing intuitive teaching methods and basic work flows. It can be taught to the robots to do complex workflows and make this a repetitive task. Therefore, this does not justify that human would be controlling robots, you there on must teach the robots by demonstrating to them the various moments and processes. The process begins with teaching the robots through intuitive learning, using intelligent clothes, and then automating the entire process. The data collected by the robot can be done through a microprocessor and its calculation can be proceeded with its base station. Once all this has been taught to the robot it can be enabled that a very simple co-working between the human and the robot can be utilised to its best. Moving on with this co-working the human can interact with the robot by signalling simple gestures and these gestures are recognised by the robot to carry on its work effectively. For the modern era today smart systems and robots are assistants that work in the background, or they are machines that perform continuous human repetitive jobs from assembly line workers, as these technologies are getting good enough, machines are now seen to be more able technology players that work alongside people as teammates. A lot of companies are open to exploring majority of avenues for building on how robots and Artificial Intelligence systems work and technical advances are important. It is found by an applied cognitive scientist that human robot systems won't serve as good as they could be if the designers don't interpret how to engineer technologies that prove to be effective with efficiency in real people.

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Introduction

Robots and Artificial intelligence need to understand their role in the task in relation to the paths that their teammates are doing, and how they might be able to help as and when there is a requirement. Some scholars have suggested that in no way robots can build experience that is shared which in on the other hand proves to be knowledge in the hands of humans, with this in mind researchers are yet exploring on ways to find out how actually this can be done. Another key factor which is likely to help robots in developing expectations of their co-worker’s behaviour is through machine learning. Coupled with human intelligence each of them will learn about how the opposites capabilities, limitations and idiosyncrasies play a major role. Among people and robot’s communication isn’t always seamless, to this there also comes a lot more challenges like making sure- they share understandings of how words are used or what appropriate responses are to questions. Researchers with regard to artificial intelligence are taking great steps in enhancing the ability of computers to produce, understand the natural language- as a lot of people are seen these days using various smart assistant devices like amazons Alexa and google home, car-based GPS direction systems. Interpersonal trust is an effective tool among the human robot teams. If the trust has been broken among a team of firefighters, it will be shown as less effective and may cost the lives of each other, or members of the public or the customers that they are trying to help. It has been derived that the advanced technology as per the dynamic world is the chronically unreliable which paves way to be rejected by human workers whose vitality is shown especially in cases of safety-critical technology. It is seen that robots are not autonomically capable of teaming up with

humans as they feel their need to be assigned most effective roles on the team, understand other team roles, learn with human team members in order to begin to initiate a common understanding and develop an effective way to interact with humans and be trustworthy and reliable. Most essentially humans should not be asked to adapt to their nonhuman teammates, rather the developers should design a format and come up with a technology to provide as a good team player alongside people. The impact of increasing robotisation in the workplace on meaningful work has been thrown light upon on a very small scale. Work that is performed in a meaningful manner shows way for enhance job satisfaction and increased worker wellbeing. We do so by identifying five key aspects of meaningful work in order to address the impact that robotisation. HUMAN ROBOT CO – WORKING 5 Robotisation of the workplace can be two things a threat or an opportunity for work on the basis of ethical discussions for how to -and how not to-coordinate robots into workplaces. It can have important positive and negative impacts on the employees of the organisations.

Research Overview

Industrial revolutions are mainly aimed at machines work with man’s work this can either be called as a robot or a machine. these machines are such which will essentially take responsibility for those jobs that are hard dangerous or boring for people. Although today we are at a stage where both people and robots can perform cleaning jobs, the previous experience with regard to speed of automation shows that in the future people would be doing the less cleaning than the robots would actually do. This speed of automation that has been introduced in our lives is to a great extent dependent on technology and how people

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accept robots. Due to significant impacts that are possible due to robots on society it is a key necessity to study the communication between robots and humans and what impact they have on the society in general. Some scholars and futurists have begun their discussion on industry 5.0 where they say that an emerging theme of this industry is that of human robot co working, although this cannot be assured of, we can be sure that human robot co working will be such a significant innovation for society and it will greatly affect the way businesses are conducted. The theme of industry 4.0 is “smart manufacturing for the future” its main aim is simple and it arrives at increasing the productivity by achieving mass production using innovative technology. The most important trending technologies are robotics, AI, Big data, Internet of things and Cloud computing. Some technologies are also present that support industry 4.0 they are 3D printing, Augmented reality, smart logistics and ambient intelligence. The vision HUMAN ROBOT CO – WORKING in therefore of industry 4.0 is to gather these technologies in such a combination towards attaining goal of smart manufacturing. On the other hand, the vision for industry 5.0 is “Human robot co working” where humans and robots will work together wherever possible. The task that will be performed by humans will be mainly focused on those that require creativity and robots are expected to do the remaining work. Drawing the comparison of Industry 4.0 and 5.0 the former's motivation is mass production while the latter's is smart society and sustainability. The power sources for industry 4.0 are derived out of electrical power, fossil-based fuels, renewable power sources while that of 5.0 is electrical power and renewable power sources. Humans are looked at as social creatures, they communicate with their kind in varied aspects of life including work. When

the number of robots in human workplaces increase manifold the number of humans in such places are likely to decrease. This therefore may restrict the social interactions between human beings. Even in cases of number of human employees being the same the introduction of robots in workplaces may have different effects on social interaction in the same workplace. This will bring different views that employees have on how to interact with robots socially. As on the same lines of this new generation having immense interaction with smartphones and looking at smartphones in such a way as part of their life it has been derived that the future of human robot interaction may be on the similar lines as human smartphones interactions. Focus has also been derived on the use of robotic systems in the manufacturing industry in relevance to social dimension since the human machine interaction is been intuitive in robotic systems it becomes a very significant objective which is progress which is technical nature which modes of work and organisation are required. The integration of socio technical systems which require further conceptual research and one which is imperial which is relevant to social aspects in technical dimension. Future research must also be one that integrates in economic and social issues to get a clear picture of a complete dimension of new robot human interaction in the marketplace today. There is a rapid increase in the minds of the society that is entering the one win which the robot would have a huge role to play. This is seen as a fundamental shift in advanced economies that will completely transform the opportunity within society and nature of work.

**The Study
Scope and Purpose**

On the basis of existing research findings, the study will try to understand how humans and

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robots will co-work and how their importance will increase in the hospital industry.

Participants

Participants in this study comprised the different kinds of doctors across various functions and departments in Bangalore from different hospitals spread across the state. Sampling Technique: The samples are collected based on Judgemental or Purposive Sampling. The required sampling unit for the study is 88 doctors in total from different hospitals and functions. They were sent questionnaires that were expected to be filled in to arrive at results and findings.

Inclusion Criteria: The inclusion criteria are doctors from hospitals, that were selected for the study.

Statistical Tools Used

The data was analysed using the following statistical techniques: SPSS VERSION 23. Here, the data was put under Mean, Standard Deviation and Standard Error Mean was analysed and interpretation was further drawn.

Objective 1: To identify the right robotic system and its effective usage. Significance level of effective usage of robotic system

Questions Corresponding:

Q14: Robots would be more effective if they had to do only one task which they have specialised in

Q15: Pre-programmed robots are most useful in performing monotonous tasks.

Q16: Usage of Programmed Interface of AI with robots to help movement at a rapid pace to reach different locations in the hospital

One-Sample Statistics


	N	Mean	Std. Deviation	Std. Error Mean
Q14	85	3.78	.956	.104
Q15	85	4.01	.748	.081
Q16	84	3.99	.570	.062

One-Sample Test

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Q14	7.489	84	.000	.776	.57	.98
Q15	12.472	84	.000	1.012	.85	1.17
Q16	15.881	83	.000	.988	.86	1.11

Objective 2: To determine the extent of the use of robots in the dynamic world.

Questions Corresponding:

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Q17: Feasibility on the side of robots to keep up with the dynamic changes

Q18: Acceptance of robots to adapt to the latest technologies provided to them

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Q17	84	3.65	.630	.069
Q18	85	3.89	.673	.073

One-Sample Test

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Q17	9.519	83	.000	.655	.52	.79
Q18	12.249	84	.000	.894	.75	1.04

Results

From our survey we also found out that there is a proper identification of right robotic systems. It shows that pre-programmed robots are most useful in performing monotonous and repetitive tasks. Robots are extensively used in the dynamic world. It shows that the acceptance of robots to adapt to the latest technologies is increasing and in the coming future robots will be a part of our lives and jobs.

OBJECTIVE:3 Level of safety and security of humans around robots


Questions Corresponding:

Q 09: Expecting robots to carry huge objects without leading to destruction is doubtful.

Q 10: Having specific safety protocols while working with robots is necessary

**Table 1.3
One-Sample Statistics**

	N	Mean	Std. Deviation	Std. Error Mean
Q7	85	4.18	.789	.086
Q8	85	4.01	.794	.086
Q9	84	3.42	.867	.095
Q10	84	4.33	.646	.071
Q11	84	3.81	.649	.071
Q12	85	4.53	.647	.070
Q13	85	4.39	.579	.063

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**Table 1.4
One-Sample Test**

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Q7	13.739	84	.000	1.176	1.01	1.35
Q8	11.745	84	.000	1.012	.84	1.18
Q9	4.404	83	.000	.417	.23	.60
Q10	18.909	83	.000	1.333	1.19	1.47
Q11	11.433	83	.000	.810	.67	.95
Q12	21.790	84	.000	1.529	1.39	1.67
Q13	22.094	84	.000	1.388	1.26	1.51

RESULTS

It can be inferred that there is a high level of safety and security that human feel with robots around. It states that precise training should be given to the humans who are expected to work with robots. Providing specific safety protocols while working with robots is necessary. Expecting Robots to carry huge objects without leading to destruction is doubtful.

OBJECTIVE:4 Determination of conducive system for effective interaction among humans and robots.

Q 22: Children are comfortable in interacting with a social robot


Q 23: Difficulty in interpreting the sign language or runderstanding information from the robot’s end will give rise to problems

:

Table 1.9

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Q19	84	3.32	.946	.103
Q20	84	4.05	.790	.086
Q21	84	3.98	.864	.094
Q22	84	3.31	.981	.107
Q23	84	3.85	.649	.071

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**Table 1.10
One-Sample Test**

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Q19	3.113	83	.003	.321	.12	.53
Q20	12.153	83	.000	1.048	.88	1.22
Q21	10.356	83	.000	.976	.79	1.16
Q22	2.890	83	.005	.310	.10	.52
Q23	11.932	83	.000	.845	.70	.99


Results:

It can be inferred that the determination of conducive system for effective interaction among humans and robots has been interpreted. The table states that robots being emotionless can have a negative impact on patients. It shows that allowing the patients to make a choice to choose either humans or robots or both in aiding is helpful. It has been interpreted that children are comfortable in interacting with a social robot.

Discussion and Conclusion

It must be considered that the effective adaptation of humans with respect to the machines: human operators are required to have a proper framework of conditions to execute their tasks (training, experience, along with skills as well as add on social competences in order to be integrated into teams working and to execute their activities in the automated environment. HUMAN ROBOT CO - WORKING 49 On conducting the survey across the hospital industry with respect to receiving responses from our target

audience that is the doctors, it can be found that getting robots to work in the front office along with manpower for registration of the patient’s details does not seem to be widely accepted and executed, in order to do this, an exposure should be provided to the robots to take up such tasks as it will be quick, accurate and efficient. Expecting robots to carry huge objects without leading to destruction is highly doubtful for the reason being that they are not as strong as humans are physically, but a suggestion can be put forward in a way where the robots can be made to stand in a manner as passing on of heavier objects becomes easier and quicker. Robots are said to be more effective if they are asked to do only one task which is specialised by them, if in the industry an opportunity is given to them, and they execute it well, no second analysis on part of humans is required, as accuracy will be well defined aptly. It can be concluded that human robot co working is moving progressively into our place of work, homes, and public settings, more opportunities will come up to study

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people and robots in not so simple social settings featured by multiple humans, roles, activities, aims, and dependencies. The usage of robots if used for repetitive and monotonous tasks are done effectively will take the position of low skilled workers who are dismissed or reassigned to other areas of groundwork. When the interaction becomes instinctive it can decrease the amount of effort and positively increase the work efficiency of planning and programming. Through mitigating the consequences of collisions among human robot is essential, the safeguarding of unintentional contact is most advisable. According to the knowledge of robot motion and configuration alongside each other with data about humans which is obtained from vision systems and other sensing modules prove to be a different path for the robot which is computed moving it away from the hazardous zone when predicted collisions are foreseen. The embodiment has brought in creativity that is essential for the robot to shift from the past task knowledge and develop a new action which is unique from the originally taught behaviour. By various interactions with the human teacher to conclude with a result which is both which are distinct from that of original task and can be achieved through combination reasoning of robots and assistance of the teacher , it has been derived at the robot and human teacher use of co-creative sequence to address the issue of transfer of task problem .This therefore encourages the robot to utilise to the maximum the knowledge of the task goals and how they are achieved in the target environment.

Robotic systems are effective in giving assistance to human beings and it will used effectively. Robots are a great tool to help mankind. Robots will be of great help to the ward boys in maintaining cleanliness and

hygiene in the premises of hospitals which is highly agreed by the respondents. Robots can copy out and store pivotal medical information minimizing the possibility of mistakes as well as helping doctors and nurses to diagnose and analyse patients and even help and assist the lower-skilled health workers to manage treatment to patients with very little input from doctors and other higher-skilled professionals. It is also found that there is a high level of safety and security that humans feel with robots around. If precise training is given to the humans who are expected to work with robots, then the humans feel more confident and comfortable around the robots.

References

- Kadir Alpaslan Demir, Gozde, Bulent Sezen (2019). Industry 5.0 and Human-Robot Co-Working.
- Antonio B. Moniz, Bettina-Johanna Krings (2016). Robots working with Humans or Humans working with Robots? Searching for Social Dimensions in new Human-Robot Interaction in Industry.
- Przemyslaw A. Lasota, Terrence Fong, Julie A. Shah (2017). A Survey of Methods for safe Human – Robot Interaction.
- S. Robla-Gomez, Victor M. Becerra, J. R. Llata, E. Gonzalez- Sarabia, C. Torre- Ferrero, J. Perez-Oria (2017). Working Together: A Review on Safe Human – Robot Collaboration in Industrial Environments.
- Przemyslaw A. Lasota and Julie A. Shah (2014). Analysing the Effects of Human-Aware Motion Planning on Close-Proximity Human–Robot Collaboration.
- Malte Jung, Pamela Hinds (2018). Robots in the Wild: A Time for More Robust Theories of Human-Robot Interaction.
- Marco Faber, Jennifer Butzler, Christopher M. Schlick (2015). Human-robot cooperation in

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future production systems: Analysis of requirements for designing an ergonomic work system.

George Michalosa , Sotiris Makrisa , Panagiota Tsarouchia , Toni Guaschb , Dimitris Kontovrakisa , George Chryssolourisa (2015). Design considerations for safe human-robot collaborative workplaces.

George Michalosa , Panagiotis Karagiannisa , Sotiris Makrisa , Önder Tokçalarb , George Chryssolouris (2015). Augmented reality (AR) applications for supporting human-robot interactive cooperation.

Tesca Fitzgerald1 , Ashok Goell , Andrea Thomaz (2017). Human-Robot Co-Creativity: Task Transfer on a Spectrum of Similarity.

David Feil-Seifer, Maja J Mataric (2012). Distance-Based Computational Models for Facilitating Robot Interaction with Children.

Panagiota Tsarouchia , Jason Spiliotopoulosa , George Michalosa , Spyros Koukasa , Athanasios Athanasatos , Sotiris Makrisa , George Chryssolouris (2016). A decision-making framework for Human Robot Collaborative workplace generation.

Andrea Cherubini, Robin Passama, André Crosnier, Antoine Lasnier, Philippe Fraisse (2016). Collaborative manufacturing with physical human–robot interaction.

Sahar Heydaryan, , Joel Suaza Bedolla and Giovanni Belingardi (2018). Safety Design and Development of a Human-Robot Collaboration Assembly Process in the Automotive Industry.

Kuo-Hao Tang, Chia-Feng Ho, Jan Mehlich and Shih-Ting Chen (2020). Assessment of Handover Prediction Models in Estimation of Cycle Times for Manual Assembly Tasks in a Human–Robot Collaborative Environment.