THE ADOPTION OF AI BASED INTELLIGENT BOTS IN THE SECTOR OF SMART MANUFACTURING

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A B S T R A C T

Artificial Intelligence on the basis of a symbolic, non-algorithmic way of solving problems. Machines are capable of updating the data itself. AI has transformed the globe beyond imagination. Usages of AI in areas like pattern recognition, data processing, and robotics are to develop human intelligence in computers. In recent times AI is popular in Cognitive Science applications like Neural networks, Fuzzy logic, Genetic Algorithms, and Intelligent Agents, and in Robotics applications like Visual Perception, Locomotion, Navigation, Tactility, and Dexterity, and also in Natural Interface applications like Natural Languages, Speech Recognition, Multisensory Interfaces, and Virtual Reality. These fast advances apply not only to AI, but also to robots, sensors, and the digitalization that connects them all. Robots and virtual assistants are two of the most prevalent Artificial Intelligence technologies employed by the industry. Natural Language Processing (NLP) and Speech Recognition Platform (SRP) are used to power Artificial Intelligence, although it is not restricted to these two.

Robots, bots based on AI involves the completion of task within shortest period of time, multitask approach, and complex task can be performed in an efficient manner that provides AI plays an key vital role in the world of robots as to perform task (multitasking) so that time can be managed and task performed by the machine are accurate and perfect according to requirement.

Keywords: *Robot, intelligence, Perception, Locomotion*

1. INTRODUCTION

In Robotics AI is having a remarkable role. **Robots** are usually used in some repetitive tasks. Using AI we can make intelligent robots that can perform tasks with their own experience. For example, Humanoid robot scan imitate human behaviour.

In most cases, this simply doesn't require artificial intelligence, as the tasks performed are predictable, repetitive and don't need additional 'thought'.

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IS ARTIFICIAL INTELLIGENCE AND ROBOTICS THE SAME THING?

Robotics and artificial intelligence are two distinct concepts that are occasionally (incorrectly) used interchangeably.

Artificial intelligence is where systems emulate the human mind to learn, solve problems and make decisions on the fly, without needing the instructions specifically programmed. Robotics is where robots are built and programmed to perform very specific duties.

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AI IN MANUFACTURING AND PROCESSING

Through artificial Intelligence we can develop from different workshops for manufacturing. We can organize in scheduling and control, design and planning and manufacturing integration for integrated software systems. Manufacturing 4.0 is altering the manufacturing sector. The arrival of manufacturing 4.0 and AI and machine learning make replicate to manufacturing process. It has immersed revolution for manufacturing companies with different industries.

Keeping in the view of the industry 4.0 paradigm, one can say that there is a huge impact on manufacturing industry due to machine learning. The industry 4.0 paradigm recommend and support the utilization of smart sensor devices, and machines for the factories which gather information related to production. Without notably changing the required resources, machine learning helps us in increasing the manufacturing efficiency by producing the actionable insights by filtering the collected data. In current era the production sector has become fascinating part with new variations which are changing the world of production technology and the change is in getting better return than in past, by using the same input, which is called as intelligence manufacturing or production. IM resulted in boosting the productivity in manufacturing sector in the wake of 4th industrial revolution. Intelligent manufacturing take in the use of complex analytics, application of sensor in robotics.

APPLICATIONS DEALING WITH AI IN DEVELOPMENT

The applications of AI technology in the manufacturing industry in recent years have been rapid development of core technologies in the modern era of Internet plus AI'. This triggers a great change in the models, means and ecosystems of the manufacturing industry. Smart Manufacturing (SM) is emerging as a latest version of intelligent manufacturing (IM). This reflects the impact and gravity of smart technologies such as Internet of Things (IoT), Cloud Computing, Cyber-Physical Systems and Big Data on industry. The real-life applications of AI include data which is very complicated. For example- in face recognition, the data points are not single numbers but images encoded as vectors of millions of numbers. Several AI systems implement machine learning instead of writing long programs that instructs a system how to carry out a task. According to manufacturing policy initiative 11, ML simply finds patterns in data and uses those data to make predictions about the future. This can be clearly understood from the simple example of a robot learning to calculate the circumference of a circle from the circle's radius. To perform this task the robot collects ―training data‖ by drawing circles of different radii, then it measures the circumference with a ruler and then finds a suitable mathematical relationship between the two. This ability of ML gives an upper hand to humans as a human learner would have used his/her intuition to make a decision between the two but algorithms do not have this ―common sense.

In 2010s, instead of intelligent techniques in manufacturing, we are coining a similar term of "smart" technologies (called "smart AI" instead of Symbolic AI) in manufacturing with the hope to improve the management of manufacturing enterprises in the product life in order to provide more options for customers. The technologies which are used for the implementation of smart manufacturing range from spectrum of domains, which are ideally termed as the IoT technologies and then many other related terms such as Internet of Services (IoS), Cyber-Physical Systems (CPS), advanced robotics, and Big Data are added to it. These smart technologies are taking main stage in the 2G intelligent manufacturing i.e. smart manufacturing. The increase of IoT/CPS and smart mobiles has made things become so easy and accessible with which the data generated allows accurate mapping.

New models are proposed for intelligent manufacturing system architecture, manufacturing and product technology. Internet plus AI characterized upcoming automatic intelligence, shared service, data driven etc.

Recently developed technologies of AI are – new generation information technology, , bio technology. Future change in manufacturing system by robots. **Robots** perform all tasks like basic analysis, mathematics, and operations in industry, observe data reduce work load of employee as well as managers. Also classify and prioritize information.

Since few years robots with advance artificial intelligence work in industries. AI and Robotics impacts on labor market and productivity. In press, academic circles also plays important role. In upcoming years robotics in industry will end manpower –work done by human and also will affect economy of any country.

ROBOTICS AS A PART OF AI

Robotics part of Artificial Intelligence Artificial Intelligence (AI) is the field that aims to understand how computers can be made to exhibit intelligence. In any aspect of thinking, whether reasoning, perception, or action (motor control), the caliceal questions are: • What knowledge is needed. knowledge needed for reasoning in relatively formalized and circumscribed domains such as symbolic mathematics and game playing is well known. Highly competent programs have been developed in such domains. It has proven remarkably difficult to get experts to precisely articulate their knowledge, and hence to develop programs with similar expertise in medicine, evaluating prospective mining sites, or configuring computers (see [Winston 1983] for a discussion of expert systems, and an account of the difficulty of teasing knowledge out of experts).

The current crop of expert systems has limited contact with the real world. Human experts perform the necessary perceptual preprocessing, telling MYCIN for example that the patient is "febrile, 0.8". Moving from the restricted domain of the expert, to the unrestricted world of everyday experience, determining what knowledge is needed is a major step toward modelling stereo vision, achieving biped walking and dynamic balance, and reasoning about mechanisms and space. What do you need to know in order to catch a ball? • Representing knowledge. A key contribution of AI is the observation that knowledge should be represented explicitly, not heavily encoded, for example numerically, in ways that suppress structure and constraint. A given body of knowledge is used in many ways in thinking. Conventional data structures are tuned to a single set of processes for access and modification, and this renders them too inflexible for use in thinking. AI has developed a set of techniques such as semantic networks, frames, and production rules, that are symbolic, highly flexible encodings of knowledge, yet which can be efficiently processed. Robotics needs to deal with the real world, and to do this it needs detailed geometry.

2. CONCLUSION

The majority of robots are now employed by humans in industries, factories, warehouses, and labs. Robots are beneficial in a variety of ways. For example, it promotes the economy because businesses must be efficient in order to compete in the industry. As a result, having robots aids business owners in remaining competitive, as robots can perform tasks better and faster than people, for example, a robot can build and assemble an automobile. However, robots cannot handle all tasks; today, robots aid in research and industry. Finally, as technology advances, new ways to use robots will emerge, bringing with them new aspirations and possibilities.

REFERENCES

[1]   INEEL website [online]. Available from: http://www.inel.gov/adaptiverobotics/humanoidrobotics/ Access 12 June 2005.

[2]   Foerst Anne, (1999) Artificial sociability: from embodied AI toward new understandings of personhood, Technology in Society, 21, pp. 373–386. T209 Resource CD-ROM, Cyborg, part 2 – Robotics.

[3]   ASIMO Honda [online]. Available from: http://world.honda.com/HDTV/ASIMO/ Access 11 June 2005.

[4]   MIT website [online]. Available from: http://www.ai.mit.edu/projects/humanoid-robotics-group/ Access 11 June 2005

[5]   Jones, A.C. (2002) 'Minds, matter and machines', T209 Resource CD-ROM, Cyborg, part 1 – Robotics.

[6]   NASA website [online]. Available from: http://www-aig.jpl.nasa.gov/public/planning/dist-rovers/ Access 12 June 2005.

[7]   Bruce, I.S. (1998) 'Man Made', The Scotsman, December 1, Spectrum, p. UP4, T209 Resource CD-ROM, Cyborg, part 1- Bionics.

[8]   ASIMO image - T209 Resource CD-ROM, Cyborg, part 1 – Robotics.