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Industry 4.0: Reimagining the Future of Workplace (Five Business Case Applications of Artificial Intelligence, Machine Learning, Robots, Virtual Reality in Five Different Industries)

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Abstract: *Artificial Intelligence (AI), Machine Learning (ML) and Cognitive Computing will directly have a tremendous impact on jobs in various industries as we are embarking on 4th Industrial revolution (Industry 4.0) of automation through robotics. If you are looking or imagining for inconceivable things which we typically read in science fiction novel(s) or when we experience(d) in movies like "The Matrix", "Moon", "Existenz" etc., to your individual life or in workplace then currently there is no other better option than Artificial Intelligence (AI). Today, Artificial Intelligence (AI) has got the uncanny knack to astonish, mesmerize and sometimes even frighten us with its incomparable capabilities in our lives or in the workplace. Digitalization in organizations is already there for decades but digital revolution is still only just the beginning. Digital technologies like Internet of Things, Artificial Intelligence and Machine Learning (sub-set of Artificial Intelligence) are drastically changing the ways the employees and customers communicate and operate in the organizations. Undoubtedly, digitalization brings enormous changes in the lives of individuals and organizations as well. Few years ago, humans tend to be the masters of technological innovation however that scenario has changed drastically. Business models that sustained for over 100 years are not any more capable enough to attract customers. Today, many of the organizations are using Artificial Intelligence empowered capabilities like Robots, Chatbots, Virtual Reality and various other forms of artificial intelligence to enrich the overall experience in the workplace and five real-time business case applications are explained in this research paper with the help of organizations like Tianyuan Garments, Amazon, Nike, Chevron and Xinhua.*

Keywords: *Industry 4.0, Artificial Intelligence, Machine Learning, Robots, Virtual Reality, Future of Workplace*

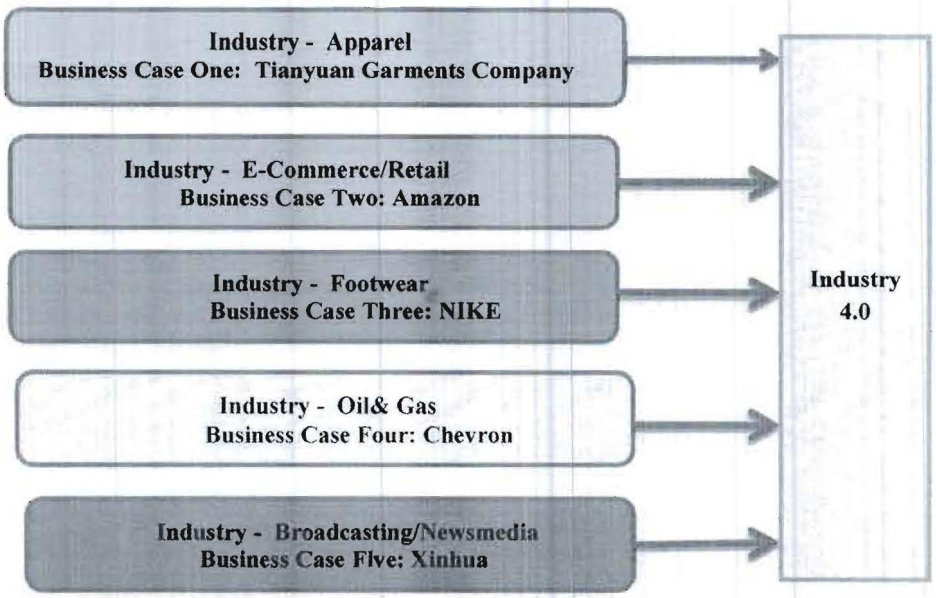
I. Introduction

Innovation in technology has always been a source of stimulated thinking for many generations. We cannot deny the fact that generally people have always been living amidst a variety of changes in this world. No matter what technology we are practicing, there is always a newer and better technological innovation round the corner. In the era of Industry 4.0, forward looking organizations are and constantly embracing new technological innovations like Artificial Intelligence enabled capabilities in the workplace in order to become more efficient, effective, and relevant as organizations. Today, capabilities of Artificial Intelligence is not only restricted to powerful computers but also utilized in smartphones, programmed equipment and wearable devices too. New Technologies like Artificial Intelligence, Machine Learningand Virtual Reality are drastically changing the landscape of labor market and affecting not only the quantity but also the quality of jobs. Thus, applications of Artificial Intelligence are not restricted to only one field like information technology but spread across various industries with its unimagined applications. Now ensuing paragraphs will be discussing applications of Artificial Intelligence in Tianyuan Garments, Amazon,Nike, Chevronand Xinhua.

Five Business Case Applications of Artificial Intelligence, Machine Learning, Robots, Virtual Reality in Five Different Industries

Some of the traditional and modern retailers are applying Artificial Intelligence and robots technologies to automate various divisions of the retail chain from manufacturing to serving to end-customer. Tianyuan Garments company ltd was founded in 1958 based in eastern China. Its primary line of manufacturing is men's and boy's clothing. The company has signed an agreement with SoftWear Automation of Atlanta to develop a fully automated T-shirt production line and has signed a memorandum of understanding with the Arkansas Government and estimated to stitch 23 million T-shirts per year with the use of sewing robots instead of depending heavily upon humans.

The term "Sewbots" refers to Robots that are capable of sewing and these "sewbots" are poised to change the way the apparel industry works. Softwear Automation Inc has launched a robot built with machine vision and with computing technologies called "Lowry". It is a lightweight, four axis robots which can be used to handle fabric, pick and place operations and direct sewing. Its high speed vision system can track fabric with utmost precise and also can prevent distortion of fabric thus providing accuracy than humans.



One: Industry-Apparel Business Case:Tianyuan Garments Company ltd

Organizations like Tianyuan Garments are using machines in their factories which has become a part of new generation of industrial robots in order to overcome the difficulties like ageing workers and high wage payments. The factory will be able to make 1.2 million T-shirts every year with each of the twenty one production lines when it becomes fully operational thus making one T-shirt every 22 seconds. According to Mr.TangXinhong, Chairman of Tianyuan Garments, it takes approximately four minutes from fabric cutting and sewing to finished product. He has also mentioned that his company plans to produce 8,00,000 T-Shirts daily for Adidas company. Tang further added that, around the world, even the cheapest labor market cannot compete with them as the personnel cost for each T-shirt works out to be approximately 33 cents, with complete automation. The factory is considered to be one of the front-runners to first to use a technology that will dramatically change the way apparel industry works in future.

Further the automated sewing machines reduces the number of laborers required in each of the 21 robotic production lines in Tianyuan Garments. There will be a labour decrease of 50% to 70% as only three to five people will work in each of the 21 robotic production lines instead of 10 workers on a conventional line. It is noteworthy to mention that not only cost reduction is possible but also increase in production because of robotic production. Robotic sewing lines produces approximately 1,142 t-shirts compared to the human sewing lines production of approximately 669 t-shirts in the duration of eight hours.

Two: Industry- E-Commerce/RetailBusiness Case: Amazon

Recently Amazon has introduced "Outfit Compare" tool "Echo Look" which will help customers by providing style advice from fashion specialists or behind-the scene experts. This tool will tell customers in which outfit they look better whether in 'outfit A' or 'outfit B' which they see online. This is how it works. The shopper is encouraged to share two photos of themselves with two different outfits from which the shopper wants to select any one outfit. After a minute, the shopper will receive a suggestion from Amazon style expert as to which outfit best suits him/her. This suggestion is usually based on number best color that suits the shopper, style of the outfit and latest trend. The "Outfit Compare" tool provides three options to the shopper to choose from based on the two outfit photos of factors like the shared. They are "Definitely pick this one," "We like this better," and "It was a close call." In order to protect the shopper's privacy, the photos can be deleted within the "Outfit Compare" in-app experience, which will be removed from the app and also from the copies associated with Amazon account.

Three: Industry– FootwearBusiness Case:NIKE

One of the most labor-intensive and expensive feature of the manufacturing industry is materials handling. Approximately, sixty to eighty percent of the time of manufacturers and logistics firms is spent on material handling task. Gripping something and sending it where it needs to go is definitely not an easy task though it appears to be a simple job. Grabit™ Inc, tries to solve these challenges involved in material handling with the help of electroadhesion and machine learning. Grabit™ has come up with an innovative Electroadhesion technology that will radically change the way factories work. Grabit™ products are already used in Fortune 500 companies in various industries like apparel, automotive, footwear, aerospace and logistics.

It takes upto 40 pieces of material to be stacked and heated to create the shoe upper portion which is the flexible part that usually sits on top of your foot when assembling a pair of Nikes. It takes approximately 20 minutes for a human labour to arrange those materials whereas Grabit™ robots can now produce Nike's shoe uppers in just 50 seconds. Hence, in an eight hour shift, Stackit™ robots will be able to make approximately 300-600 pairs of Nikes.

Stackit™, a product of Grabit™ is a material handling robot that will provide 20x productivity and Return on Investment can be achieved in less than 2 years. The material handling robot's electroadhesive gripper has unlimitedoptions as to effortlessly stacking various types of materials such as meshes, composite fibers and leathers in aerospace and apparel industries.

Four: Industry-Oil and GasBusiness Case:Chevron

Oil and gas companies will be able to manage their profit and loss at the well level itselfto optimize the production cost per barrel by integrating various aspects like production management, collection of data for analysis and forecasting with the help of Artificial Intelligence tools. Required data can be collected from any location with the help of remote sensors that are connected to wireless networks and collected data can be analyzed based on the need. According to McKinsey Report, oil and gas supply chain will be able to gain $50 billion with respect to savings and increased profit. Chevron is presently using Artificial Intelligence to recognize new well locations outside California thereby helping the company to reduce the finding costs. With the help of AI Software, the company is able to drill in better locations and has witnessed increase in 30% production levels compared to traditional methods. The company is also able to adopt predictive models so the performance of various pieces of rotating equipment can be analyzed and failure of devices can be avoided well in advance. Further, using Artificial Intelligence tools has helped the company to avoid any unplanned shutdowns and also decreased repair expenses. Therefore, Artificial Intelligence can help oil companies to enhance the decision making process in the organization by improving the overall efficiency in operations.

Five: Industry-Broadcasting/News MediaBusiness Case: Xinhua

The media industry has evolved over a period of time with the help of innovation and continuous technological development. As a result, artificial intelligence has now entered into the news-reading field.Xinhua, China's state-run news agency uses "Artificial Intelligence" anchors to read news as real-life humans read news in TV. These AI Anchors were designed by manipulating faces of real television newsreaders with synthesised voices. According to Xinhua, machine learning technology was used by the anchors to synthesise the realistic speech, movements of lips and facial expressions so that theseAI Anchors will be able to deliver the news like real-life newsreaders do so that a life-like image can be felt instead of a cold robot. It was recently launched at World Internet Conference in Wuzhen by Xinhua and Chinese Search Engine Sogou. The AI anchors are live across Xinhua's internet and mobile platforms, apps, social media and online TV streaming service. For example, one of the AI anchor voice and appearance was modelled on Xinhua's real life newsreader Mr.Zhang Zhao. These AI anchors simply need to receive input text into the system from human editors. Certainly, it will result in the reduced news production costs and at the same time it will improve efficiency as these AI anchors can work 24/7 on various social media platforms in addition to its official website.

II. Conclusion

Insightful technological advances are disrupting traditional methods of working and stimulatingdrastic changes in productivity. Today, Artificial Intelligence, Virtual Reality, Machine Learning and other contemporary technologies are used in many industries to increase productivityandto decrease the costs.More advancement is trending in Artificial Intelligence field and it will certainly play an inevitable role in various industries in near future for the possibility of its wide variety of applications in diverse industries. Thus, Artificial Intelligence (AI), Machine Learning and other modern technologies are disrupting traditional methods of workand creates a whole lot of opportunities to reimagine and redesign as to how and when any work needs to be accomplished in diverse industries.

References

[1]. http://www.digitalistmag.com/digital-supply-networks/2017/08/07/artificial-intelligence-future-of-oil-gas-05259467
[2]. https://www.fastcompany.com/40454692/this-t-shirt-sewing-robot-could-radically-shift-the-apparel-industry
[3]. https://www.geospatialworld.net/blogs/13-artificial-intelligence-trends-2018
[4]. http://globalapparelforum.com/rise-robots-means-manufacturing-will-never
[5]. https://www.geekwire.com/2018/amazon-patents-robot-can-tailor-clothes-glow-dark-guidance/

[6]. https://grabitinc.com/company/
[7]. https://grabitinc.com/products/
[8]. http://roboticsandautomationnews.com/2018/02/02/automatic-shoe-production-system-launched/
[9]. http://softwearautomation.com/about/
[10]. http://softwearautomation.com/robotics-automation-news/
[11]. https://techcrunch.com/2017/03/17/amazon-will-now-tell-prime-members-what-to-wear-via-a-new-outfit-compare-feature/
[12]. https://www.therobotreport.com/grabit-robots-make-nikes-faster-humans/
[13]. https://www.investors.com/news/ai-news-artificial-intelligence-surging-interest-big-oil-companies/
[14]. https://www.news.com.au/finance/business/media/chinese-broadcaster-unvei
[15]. https://www.theguardian.com/world/2018/nov/09/worlds-first-ai-news-anchor-unveiled-in-china