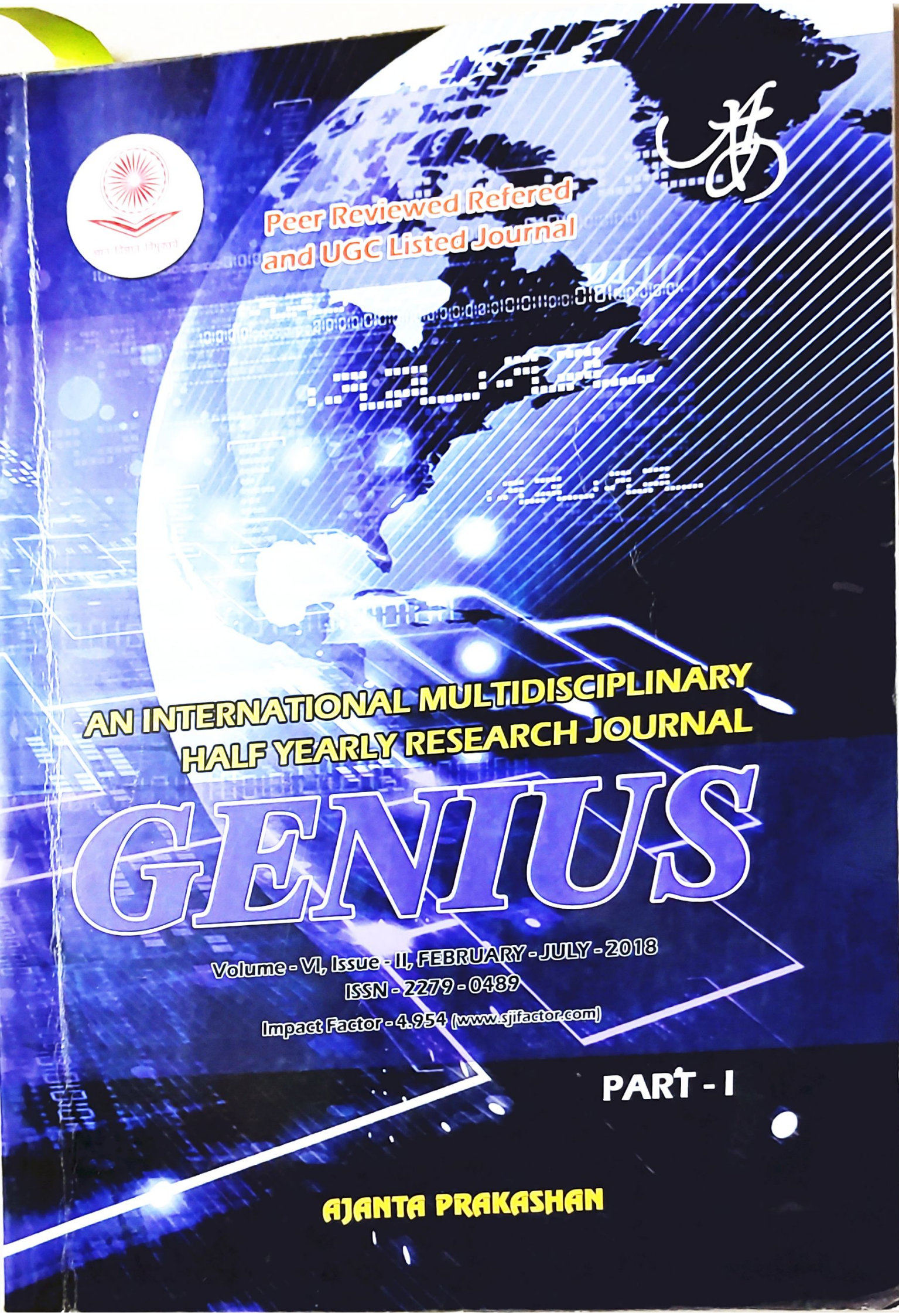
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A Focus on Key Technological Components for the New ERA of Industrial Revolution 4.0

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stract

The paper shows that the focus in the forthcoming segment will be laid on the ortance of the fourth industrial revolution on the Indian economy, the major steps taken he government and the customers to adapt the new trend and recent technological lopments. This segment gave us an insight on the global approach towards Industrial olution 4.0, the initiatives taken by various countries & major automobile giants and the vations & developments impacting the automotive sector. The study indicates that new rmation technologies are able to raise business processes to a higher level of efficiency to generate economies of scale. But in situation of high uncertainty respectively high plexity an opposite effect arises. People, who are involved in complex business esses, become uncertain concerning, using new technologies like big data, cloud puting or mobile computing. That increases the transaction costs, leads to a lack in al trust. And a reduced use of industry 4.0 technologies. It is necessary to assess the stry 4.0 readiness of industrial enterprises as manufacturing sector is currently facing tantial challenges. These challenges are in regard to disruptive concepts such as the IoT, r physical systems or cloud-based manufacturing. Subsequently, increasing complexity ll firm levels creates uncertainty about respective organizational and technological bilities and adequate strategies to develop them.

Keywords: Industrial Revolution 4.0, BD, CC, IoT, Simulation, AR, Cyber security, M, Autonomous robots.

oduction

The Indian automotive sector is witnessing a boost and thrust from the Government dia which emphasizes and focuses on introduction of new and revolutionary production sses into the Indian manufacturing system by keeping ICT at the heart of development. is expected to become a major automobile manufacturing hub and the third largest

market for automobiles in the world contributing approximately 25 percent of the GDP. this vision, the massive expansion in the Indian automobile industry makes the country for the era of "Industrial Revolution 4.0".

According to IBEF, the Government of India has set an ambitious target of incre the contribution of manufacturing output to 25 percent of Gross Domestic Product (GDP 2025, from 16 percent currently. IoT, being one of the most important aspects of Industry for India, is expected to capture close to 20 percent share in global IoT market in the five years. According to IBEF forecast, the IoT market in India is projected to grow CAGR of more than 28 percent during 2015-2020. Government of India has taken initia such as Green Corridors and 'Make in India'

Industrial Revolution 4.0 started in Germany. The momentum is gradually pickin in the United States, Japan, China, the Nordic countries and the United Kingdom to bring into the system. Companies all over the world are expecting to dramatically incre digitization over the next five years. By 2020, the US aims to achieve 74 percent digitiz from the current levels of 32 percent, Asia Pacific to 67 percent from current 36 percent the Europe, the Middle East and the Africa to 71 percent from current 30 percent. Ind 4.0 is all about optimization of smart, flexible supply chains, factories and distribu models where machines capture and convey more data via machine-to-mac communications and to human operators. All this aims at enabling businesses to m quicker, smarter decisions, all while minimizing costs. Industrial Revolution 4.0 is initiative started by the German Government in 2006. The initiative's intention is to dig the manufacturing sector in order to increase productivity. The German industry is expe to invest a total of €40 bn in Industry 4.0 by 2020.

The present paper makes an attempt to probe the focus on key technologi components for the New era of Industrial Revolution 4.0.This can be highlights with the h of the following headings:

Objective of the Study

The present study aims to evaluate a focus on key technological components for new era of Industrial Revolution 4.0.

Methodology

The data for the present study has been collected from existing secondary literat such as books, journals, published and unpublished annual reports, Govt. Manuals/Ord websites etc.

nceptual Framework

Now we are expected to enter a new world of Industrial Revolution 4.0, in which nputers and automation will come together in an altogether a new way, with robotics nected remotely to computer systems equipped with machine learning algorithms that can trol the robotics with minimum human support.

"Industrial Revolution 4.0 (Industry 4.0) has highly intelligent connected systems that ite a fully digital value chain. It particularly is based on cyber physical production ems that integrate communications, IT, data and physical elements and wherein these ems transform the traditional plants into smart factories. Here the objective is that the hines talk to other machines and products and information is processed and distributed in time resulting in profound changes to the entire industrial ecosystem".

y Technological Components for the New Era of Industrial Revolution :

The vision of Industry 4.0 is likely to be adopted worldwide and it might influence r initiatives and cooperative efforts. In general, there are nine key technological nponents that progressively make up the foundation of Industry 4.0:

Big data(BD)

One of the major challenges with data has been its quantum. Too much data makes it icult to identify the relevant information and trends that can lead to some intelligent lysis. This is where "Big data" and analytics come in. They make it possible to identify performance of an individual component and its operating restrictions in order to prevent ire production issues and take preventative action.

Cloud computing (CC)

The industry has seen a large shift in utilizing cloud solutions, and this will continue grow. The cloud is being used for applications such as remote services, colour nagement, and performance benchmarking and its role in other business areas will tinue to expand. With continuous advancements in technology, machine data and ctionality will only continue to shift towards cloud solutions. The cloud allows for a much er roll out of updates, performance models, and delivery options than standalone systems.

Internet of things (IoT)

The IoT is a key functionality in Industry 4.0 driven solutions. IoT is a system of rrelated computing devices, mechanical and digital machines, objects and people that are vided with unique identifiers and the ability to transfer data over a network without uiring human-to-human or human-to-computer interaction. For instance smart watches in

the market have turned our wrists into smart phone holsters by enabling phone calls, and more. Devices such as Fit bit and Jawbone have helped r fitness world. With the proper connections and data, the IoT can solve tra issues, reduce noise and pollution.

4. Simulation

The simulations of systems allow assessment of various scenarios. On are assessed, cost effective solutions can be developed, tested and implemente leading to reduced cost and time to market.

5. Augmented reality (AR)

Augmented reality grows in use by providing real-time information manner to allow humans to better integrate and interact with electronic syst can include the transmission of information on repairs for a part that can be v different devices or the training of personnel using simulations and 3D views or equipment.

6. Cyber security

The security of information becomes paramount as we move awa systems towards increased connectivity from the IoT and cloud. Security enable the successful implementation of a truly modern and digitized producti leveraging all of the benefits of a connected environment.

7. Additive manufacturing(AM)

This continues to become increasingly important for small-batch appli the production of individual parts or personalized products. This will be used with the customer or by suppliers to improve designs with increased performan and cost effectiveness.

8. System Integration(SI)

Mostly systems are highly automated within their own operations an communicate with other systems. Standards and open architecture support the of information both to the business and to the customer/end user. This can inv common languages for data exchange such as JDF for job information, Cx information etc.

9. Autonomous robots

They are used to automate production methods across the various se powered by the concept of Internet of Things (IoT). This connects devices a

nes to communicate with each other. Materials can be transported across the factory via autonomous mobile robots (AMRs), avoiding obstacles, coordinating with fleet and identifying where pickups and drop offs are needed in real-time. By connecting to ral server or database, the actions of robots can be coordinated and automated to a r extent than ever before. They can complete tasks intelligently, with minimal human

lusion

The focus in the forthcoming segment will be laid on the importance of the fourth rial revolution on the Indian economy, the major steps taken by the government and the ners to adapt the new trend and recent technological developments. This segment gave insight on the global approach towards Industrial Revolution 4.0, the initiatives taken rious countries & major automobile giants and the innovations & developments ting the automotive sector.

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