RECENT INNOVATIONS IN ARTIFICIAL INTELLIGENCE (AI)

[1]G.Ramachandran, [2] S.Kannan, [3] T.Sheela, [4] A.Malarvizhi, [5] PM Murali, [6] G.Murali
[1-2,4-6] Assistant Professor of Electronics and Communication Engineering, Vinayaka Mission's Kirupananda Variyar Engineering College, Vinayaka Mission's Research Foundation (Deemed to be University), Salem 636308, Tamilnadu, India.

[3]Associate Professor of Electronics and Communication Engineering, Vinayaka Mission's Kirupananda Variyar Engineering College, Vinayaka Mission's Research Foundation (Deemed to be University), Salem 636308, Tamilnadu, India.

Abstract:-

Artificial Intelligence (AI), commonly defined as the science of making machines do things that would require human intelligence, is often confused with robotics, particularly humanoid robotics, as they are the closest to 'human' intelligence. Influence data engineering innovation for semantic architecture, information graphs, and deep neural networks to transform your business. Utilize data consumption approaches to bring data science to life through workflow integration of analytics, visualization of information, and integrated processes for decision-making.

Keywords:- Automation ,Artificial Intelligence ,Robotics, Neural networks, Machine Learning

1.Introduction

Robotics is of path an important branch of AI. Retailers, such as Staples and Office Depot, have robots on their payroll for supply chain management, making a rather significant contribution to their business. The manufacturing industry is adapting robotic support too. Experts argue that manufacturing, which bases several of its supply chain management decisions on cheap labour, will do so no more as robots replace labourers in the assembly line.

1.1Artificial Intelligence

The underlying technologies of Artificial Intelligence (AI) have seen valuable growth over the last few years. Some of its technologies like neuromorphic computing, real time emotion analytics, thought controlled gaming and autonomous surgical robotics are already revolutionizing various industries in terms of precision surgery, real time gaming environments etc. Though these features are making AI very useful, we are still struggling to implement basic cognitive capabilities in AI using adaptive intelligence. AI not only has strengths but also shortcomings when it comes to the vision of replacing humans.

Let us consider application of AI in various dimensions of supply chain management. In case of procurement, we can use a chatbot with Natural Language Processing capabilities to negotiate and solve operational problems. These problems will be solved based on historical data for situational decision making using predictive analysis. In case the condition is new, the problem gets transferred from a chatbot to a human. Similarly, Machine Learning could help in better optimization of inventory, and demand and supply planning based on pattern recognition. Still there must be a human interface

to understand and monitor the overall operations planning. Other enablers of AI like IoT and robotic automation can be used in warehouse for stacking, retrieval and order picking under the surveillance of a

warehouse manager. Hence, even though AI is replacing us for major operational works, it still needs to be under the supervision of humans.

Now, let us look at the scenario of complete AI controlled supply chain. In this, we are looking beyond augmentation and automation-enabled capabilities. For example, Machine Learning algorithms for complete procurement management, driverless vehicles for inbound logistics, automated production lines and sensor-based robotic warehouse management

2. Literature survey

AI finds its applicability in the autonomous operation of heavy equipments operating in mines across the globe. The existing technologies in Fleet Management systems is limited to use of GPS and few sensors like LiDAR. AI powered autonomous vehicles augments the conventional features by combining the sensor inputs with the deep learning AI systems to enable safe routing of vehicles in real time with increased accuracy and precision. AI driven autonomous vehicles will also eliminate the risk of safety hazards caused by human drivers due to fatigue, etc. The success of the AI powered vehicles lies with AI system trained on a humongous data pool of potential situations that might occur in real life. The system must be capable and robust enough to handle unexpected situations.

2.1Man and Machine AI

The maximum number of games was won when chess experts worked seamlessly with the computer program. This tells us about the power of Man-Machine collaboration.

2.2Impact of Emerging Technologies AI

Imagine the impact of automation, Machine Learning and AI on the medical profession. Agreed, nothing can replace a doctor's training and intuitive understanding of a patient's condition. But the doctor can gain a lot from the assistance provided by technology. In an instant, years and even decades of data can be analyzed and presented to doctors for more accurate diagnosis and treatment regimes.

3. Proposed methodology

Artificial Intelligence

It is a two-way alley: As we begin to use innately native methods of interacting with machines, machines will also become capable of more "human-like" behaviour. Machines will begin to use a mix of Artificial Intelligence (AI), Augmented Reality (AR), Virtual Reality (VR) and Mixed Reality to kick off an era that truly begins to erase the lines between humans and machines, improving their usability and effectiveness. Among the areas where we will begin to see the first extensive use of these new interfaces is where human-to-human interaction is the maximum. Today's scenario from an enterprise perspective will be in customer care, with maximum user interactions. Customer care and employee training are

pervasive across industries. These two verticals will, in all likelihood, be the first to make HMI more supportive, rewarding and motivating.

Quality Engineering and Testing of an AI embedded product

Data Intensive Testing	Assuring the Data consistency, Storage and transformation would be some of the Quality checks to be done	Artificial Intelligence systems are best suited when there is enormous volumes of Data
Chatbot Ecosystem	A Chabot ecosystem Assurance would lead to multiple validations as it would involve: 1. Interaction Channels (Chat, SMS, Mobile app, Virtual agent etc.) 2. Human/Machine UX 3. Cloud Services (Open API's, databases, apps, devices etc)	A disruptive way of testing a bot would involve validating the bot by building an Assurance Bot which would perform End to End Validations

Artificial Intelligence and Machine Learning

The potential to marry multiple technologies into a single process transformation is very high for most business processes. Combinatorial technologies are creating super intelligent products and services everywhere you look. In a retail store, the ability to combine Computer Vision, real time Big Data analytics and IoT information can redefine the in-store customer experience. Technologies such as Object Detection, IoT, Augmented Reality and Haptic Feedback can be combined to create immersive learning/ training/experience environments. A CNC lathe operator could use these technologies for training. Sport coaches could use it for training athletes. Oil & Gas, Utilities and Mining operations could use these to make field workers more efficient and improve safety. The Armed Forces could use it for military training without putting personnel in harm's way.

Other examples of relevant technology combinations -

I. Computer Vision + Machine Learning + 5G + Cloud - Traffic monitoring and control in a smart city
II. Augmented Reality + Virtual Reality - Entertainment, education and work
III. 5G + Autonomous Vehicles + Computer Vision - Real time route optimization and last mile travel and delivery

IV. Block chain + Smart Contract + AI – Distributed systems that can enforce laws and implement services, the next generation of 'public utilities'

Given the enormous amount of technological innovation and development happening, the critical element, once again, is thinking carefully about how technology can intersect and amplify. Choosing the right combination of technology, along with a deep understanding of the domain in which they will be applied, is essential to create relevant innovation. Research shows that digitizing customer care can significantly raise customer satisfaction while reducing costs simultaneously. Therefore, organizations use advanced data collection, data analysis, and AI to provide valuable insights about customers and improve the overall call center experience. Customer call center is a critical touchpoint for businesses. Organizations that realize this and undergo digital transformation in their call centers will have a real competitive advantage in today's customer-driven economy.

Future work

Artificial Intelligence (AI) and Machine Learning (ML) in particular are finding widespread applications in many industries. However, many customers across industry verticals, contemplating the adoption of ML in their business and IT process automation, have unreasonable expectations about the capabilities of these learning machines. Many imagine or opine that ML can completely take over human tasks. We will take a closer look at ML, explain the learning process and set the right expectations for these customers.

To begin with, computers are dumb machines out-of-the-box. Even the most advanced computer is only useful when programmed. The definition of ML, specifically "the ability to learn without being explicitly programmed" has opened up a lingering confusion about the basic premise about machine capabilities. Self-learning and autonomous machines have become misconstrued terms in the ML world. Data scientists have tried to mimic the human learning process on machines. Therefore, understanding the way humans learn is key to understand ML. Let us begin with a few examples that illustrate how humans learn by experience:

6.Conclusion,

Artificial Intelligence and Chatbots are complementary emerging technologies which when used collaboratively with Cloud can disruptively and exponentially increase benefits, especially in the CRM space. These technologies and their applications in business scenarios will keep increasing and improvised upon at a break neck speed. Ensuring that organizations are able to successfully implement

and reap the promised benefits at a swift space means that their Quality Engineering strategy should continuously evolve and adapt. This will ensure that the organization is future ready.

Reference:-

1.The Internet of Things: Enabling Technologies, Platforms, and Use Cases", by Pethuru Raj and Anupama C. Raman (CRC Press)

2. Internet of Things: A Hands-on Approach", by Arshdeep Bahga and Vijay Madisetti (Universities Press)

3.David Hanes, Gonzalo Salgueiro, Patrick Grossetete,Robert Barton, Jerome Henry,"IoT Fundamentals: Networking Technologies, Protocols, and Use Cases for the Internet of Things", 1stEdition, Pearson Education (Cisco Press Indian Reprint). (ISBN:978-9386873743)

4.Srinivasa K G, "Internet of Things",CENGAGE Leaning India, 2017

5.Vijay Madisetti and ArshdeepBahga, "Internet of Things (A Hands-on-Approach)", 1stEdition, VPT, 2014. (ISBN:978-8173719547)

6.Raj Kamal, "Internet of Things: Architecture and Design Principles",1stEdition, McGraw Hill Education, 2017. (ISBN:978-9352605224)

7..Ahmed Abdulkadir Ibrahim ,Wang Zhuopeng College of Electronic Communication and Physics, Shandong university of Science and Technology, China" IOT Patient Health Monitoring System "Int. Journal of Engineering Research and Application "ISSN : 2248-9622, Vol. 8, Issue 1, (Part -III) January 2018, pp.77-80