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DigitalITAL

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A NOTE FROM OUR MENTORS



Our mission at CCET is not only to produce engineering graduates but to produce engineering minds.

Dr. Manpreet Singh
Principal CCET (Degree Wing)



ACM CCET provides student a great opportunity to learn scientific and practical approach of computer science.

Dr. Sunil K. Singh
Professor and HOD, CSE | Faculty Mentor



Every person should be provided with an opportunity to learn and explore the field of computer science.

Er. Sudhakar Kumar
Assistant Professor, CSE | Faculty Sponsor



CCET ACM Student chapter is a group of people with similar interests and goals in computer science. Together, this platform focuses on the growth and development at not only personal but professional level also as it has a unique learning environment.

Akash Sharma
UG Scholar, 7th Semester, CSE | Chairperson, CASC



ACM-W Student Chapter of CCET aims to promote women in technology. As a member of this community, you will have the opportunity to collaborate with others who share similar interests and explore different areas of computing in order to advance in them.

Anureet Chhabra
UG Scholar, 7th Semester, CSE | Chairperson, CASC-W



CCET ACM

STUDENT CHAPTER



Research and
Development



Student Speaker
Program



Competitive
Coding



Designing &
Digital Art



Internship and
Career
Opportunity

ABOUT ACM

ACM boosts up the potential and talent, supporting the overall development needs of the students to facilitate a structured path from education to employment. Our Chapter CASC focuses on all the aspects of growth and development towards computer technologies and various different fields. Overall, we at CCET ACM Student Chapter, through collaboration and engagement in a plethora of technical activities and projects, envision building a community of like-minded people who love to code, share their views, technical experiences, and have fun. We have been trying to encourage more women to join the computing field, so we started an ACM-W Chapter to increase the morale of women. CASC launched an app which aimed at maintaining decorum of reading among CS members and sharing their ideas.



CCET ACM-W

STUDENT CHAPTER



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Opportunity

ABOUT ACM-W

The CCET ACM-W was founded in October 2021 with an aim to empower women in the field of computing and increase the global visibility of women in the field of research as well as development. We provide a platform for like-minded people so that they can grow together and contribute to the community in a way that shapes a better world. Our chapter was founded to encourage students, especially women, to work in the field of computing. The chapter's main goal is to create even opportunities and a positive environment for students, where they can work to develop themselves professionally. We at the ACM Student chapter aim to build a globally visible platform where like-minded people can collaborate and develop in their field of interest.

CASC'S RECENT ACHIEVEMENTS

Published Papers

- A research paper titled “A Novel Transfer Learning-Based Model for Ultrasound Breast Cancer Image Classification” authored by Saksham Gupta, Satvik Agrawal, Sunil K Singh, Sudhakar Kumar was published in Computational Vision and Bio-Inspired Computing: Proceedings of ICCVBIC 2022.
- In the proceedings of the 2023 International Conference of Computational Intelligence Communication Technology and Networking (CICTN) a research paper titled “Routing of Vehicular IoT Networks based on various routing Metrics, Characteristics, and Properties” authored by Rakesh Kumar; Sunil K. Singh; D.K. Lobiyal has been published by IEEE.

DIGITIZATION FOR SUPPLY CHAIN OPTIMIZATION

Kanishk Nagpal [CO21328 , CSE]

Introduction

One key strategy that Walmart has implemented is the use of a large network of distribution centers. Currently there are more than 10,000 stores up and running all around the world. These centers are strategically located throughout the country, which allows Walmart to efficiently distribute products to its stores and to quickly restock items that are running low. Additionally, Walmart has invested heavily in transportation and logistics, which allows it to move goods quickly and at a low cost. The company has invested in data analytics and automation technologies, which allows it to predict demand more accurately and to manage its inventory more efficiently. Additionally, it has implemented RFID technology in its stores, which allows it to track products in real-time and to quickly respond to changes in demand. All this has been implemented using automation in data processing. Bowing down to all these activities, it comes down to why is this being done at all?

Tech Integration in Supply Chain Management

When we are talking about the network of supply chain, we are technically working with a huge amount of data which is scattered all over the world or to the scope of that supply chain branch. With this scale vital data like stocking and pricing information, there needs to be a systematic and generalized way all the stores under a chain of branding work in sync and mutual coherence. The introduction of technology as a solution to human challenges has prompted researchers to explore its potential in resolving various issues. In this context, applying technical solutions to optimize supply chain management has become essential. All this optimization is done to streamline operations for unparalleled efficiency and customer satisfaction.

The primary motivation behind these efforts is to create a streamlined and responsive supply chain ecosystem that addresses the evolving demands of the modern retail landscape.

Some of its major implementations in the field of supply chain are:

-5G Technology: It enables improved connectivity, fostering better communication and collaboration across supply chains. By utilizing IoT sensors, real-time data collection and analysis are achievable, providing accurate visibility and tracking abilities. This allows for precise monitoring of product locations, current status, and potential delays, ultimately enhancing the effectiveness and agility of supply chain operations.

-Blockchain Technology: Initially developed for cryptocurrency transactions, it is now being harnessed in manufacturing industries to enhance supply chain management. It operates as a secure, digitized ledger that validates, records, and encrypts transactions, replacing manual processes and improving traceability. This internet-based system ensures immediate and secure transmissions through linked blocks, and the distinction between permissionless and permissioned ledgers is crucial for real-time data validation and analysis in supply chain management.

-Autonomous Vehicles: The integration of autonomous vehicles, including self-driving trucks and drones, is reshaping supply chains by reducing expenses, optimizing delivery routes, and mitigating human errors. Additionally, the convergence of AI, machine learning, and IoT is significantly enhancing the accuracy and mobility of industrial robots, enabling a

new generation of collaborative robots (co-bots) that can work alongside humans in shared environments, thereby boosting productivity and safety in supply chain operations. Uber Freight has introduced Volvo's self-driving solution on specific routes in Texas, a promising sign for the future of supply chains.

-Big Data Analytics and AI: The integration of Data Analytics and Artificial Intelligence is revolutionizing supply chain management by providing unprecedented insights and driving smarter decisions. AI algorithms enable predictive modeling, offering accurate forecasts for demand patterns, minimizing overstock and stockout situations. This synergy empowers supply chains to respond swiftly to market shifts and optimize resource allocation.

Merits

-Advanced analytics and data-driven insights help optimize resource allocation, from inventory management to transportation routes. This leads to reduced waste, cost savings, and improved overall efficiency.

-Technological tools enable supply chains to quickly respond to market shifts, consumer trends, and unexpected disruptions. This agility is essential in today's dynamic business landscape.

-Automated systems and IoT sensors provide real-time data on inventory levels, helping businesses maintain optimal stock levels and reduce carrying costs.

-Automation and digitization streamline processes, reducing lead times for production, distribution, and delivery. This agility improves customer satisfaction and accelerates time-to-market.

-Technology facilitates tracking and measurement of sustainability metrics, enabling businesses to optimize routes, reduce emissions, and make environmentally conscious decisions.

Limitations

-Implementing technology solutions requires a significant upfront investment that small and medium-sized businesses might find it challenging to allocate resources for these costs. This might be in terms of infrastructure, software, training, and integration.

-The reliance on technology increases the risk of data breaches and cyberattacks which makes storing sensitive supply chain data in digital formats demands robust cybersecurity measures to safeguard against potential threats.

-Technology-driven supply chains are vulnerable to disruptions caused by infrastructure failures, power outages, and network downtime. Relying solely on digital systems can lead to operational halts in case of technical glitches.

Conclusion

As technology continues to evolve, its integration into domain use cases like supply chain practices will remain essential for businesses to thrive in a fast-paced global marketplace. The amalgamation of these technologies not only optimizes operations but also enhances the overall customer experience. Reduced restocking times mean products are readily available, minimizing stockouts and meeting customer demand promptly. Additionally, streamlined logistics translate to cost savings, allowing these supply chain stores to offer competitive pricing to its customers. While there are merits to it, we still face issues like primary setup cost, data security and potential system failures. Yet it is still too early to blame this process for these issues as technology and digitization is a forever monotonic process in terms of modernization.

CONSENT, DATA COLLECTION AND USER CONTROL IN AI-AUTOMATION

Saksham Arora [MCO22390 , CSE]

In the ever-evolving landscape of technology, artificial intelligence (AI) has emerged as a transformative force, revolutionizing industries from healthcare to finance. However, this digital revolution comes with a crucial caveat: the ethical management of consent, data collection, and user control. As AI-driven automation becomes more pervasive, it raises questions about how individuals' rights to privacy can be respected while harnessing the potential of cutting-edge innovations.

Consent and why does it matter?

Consent, in the context of AI-driven automation, refers to the voluntary agreement of individuals to allow their data to be collected, stored, and processed by AI systems. Consent is a fundamental principle of privacy and data protection, as it empowers individuals to have control over their personal information. Consent matters because it upholds the principle of autonomy and respects individuals' rights to make informed decisions about the use of their data.

Consent and Data Collection in AI:

The digital panorama poses precise challenges to obtaining knowledgeable consent. Unlike conventional styles of consent, where face-to-face interactions allow for direct conversation, AI structures regularly operate inside the historical past, making it hard to convey complex statistics to users. This raises concerns approximately whether or not people truly apprehend the quantity of statistics collection and its implications.

The Role of Transparency and Control:

Transparency is a critical element within the consent technique. People need to have access to clear and effortlessly understandable causes about how their data could be

used, who could have got entry to it, and the capacity advantages and risks related to its utilization. This empowers customers to make knowledgeable selections and reinforces the trust between customers and AI systems. Person control is similarly vital. People ought to have the capacity to without difficulty furnish, regulate, or withdraw their consent at any factor. This ensures that they remain in charge of their data, promoting an experience of ownership and reducing issues about statistics misuse or unauthorized admission.

Challenges and Ethical Concerns:

One of the main challenges in implementing informed consent in the context of AI-driven automation is the complexity and opacity of these systems. AI systems often operate using complex algorithms and decision-making processes that are not easily understandable by the average user. This lack of transparency makes it difficult for users to fully grasp the intentions and consequences of data collection and usage, raising concerns about their ability to provide informed consent. Furthermore, there is a power imbalance between users and AI-driven systems.

Navigating the fine line between Data Collection and User Control:

Navigating the relationship between data collection and user control is a delicate balance finding the balance between data collection and user control is a complex task. On one hand, data collection is essential for AI systems to operate effectively and provide meaningful insights and automation. On the other hand, user control is crucial for protecting privacy, promoting autonomy, and ensuring ethical use of personal data. To address these concerns and strike a balance, several principles should be considered:

-Transparency and Informed Consent: AI systems should provide clear and understandable information about the data that is being collected, how it will be used, and how users can control its usage. This includes informing users about the purpose of data collection, the intended use of the data, and any potential risks associated with its usage.

-Purpose-Limited Data Collection: AI systems should only collect the minimum amount of data necessary to fulfill their intended purpose. Collecting excessive amounts of personal data raises concerns about privacy and security.

-Minimization: AI systems should limit the collection of personal data to only what is necessary for the system's functionality.

Possible Solutions:

To address these challenges and ethical concerns, incorporating ethical reasoning into AI systems is essential. Ethical reasoning can help ensure that AI systems are developed and implemented in a way that respects individual autonomy, protects privacy, and promotes fairness. Additionally, ethical systems can provide a framework for evaluating the potential consequences and impacts of data collection on individuals and society as a whole. Incorporating ethical reasoning into AI systems is a crucial step toward addressing the challenges and ethical concerns surrounding data collection and usage. By incorporating ethical reasoning into AI systems, we can ensure that the collection and usage of data align with principles of transparency, informed consent, and purpose-limited data collection. Overall, finding the balance between data collection and user control is a complex task that requires consideration of principles such as transparency and informed consent, purpose-limited data collection, and ethical reasoning in AI systems. In today's rapidly changing world, the significance of accurate weather forecasts is crucial for industries such as agriculture, transportation, and emergency preparedness. However, it is important to strike a balance between the benefits of

collecting data for accurate forecasts and the ethical considerations surrounding data collection and usage.

Conclusion: Empowering Users in the AI-Era:

In the era of AI-driven automation, consent, data collection, and user control are crucial elements that need to be carefully considered. Users must be empowered with transparency, informed consent, and the ability to exercise control over their personal information. This ensures that their autonomy is respected, their privacy is protected, and they can make informed choices about how their data is used. By incorporating principles such as transparency, purpose-limited data collection, and minimization, AI systems can better navigate the fine line between data collection and user control, promoting trust, and ensuring ethical use of AI-driven automation.

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“The best way to predict future is to invent it.”

ALAN KAY

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