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Panel Discussion on "AI-empowered BlockChain Applications"
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Introduction

In 1950 Alan Turing published a landmark paper ("Computing Machinery and Intelligence) in which he speculated about the possibility of creating machines that think. If a machine could carry on a conversation that was indistinguishable from a conversation with a human being, then it was reasonable to say that the machine was "thinking". This simplified version of the problem allowed Turing to argue convincingly that a **"thinking machine"** was at least *plausible* and the paper answered all the most common objections to the proposition.
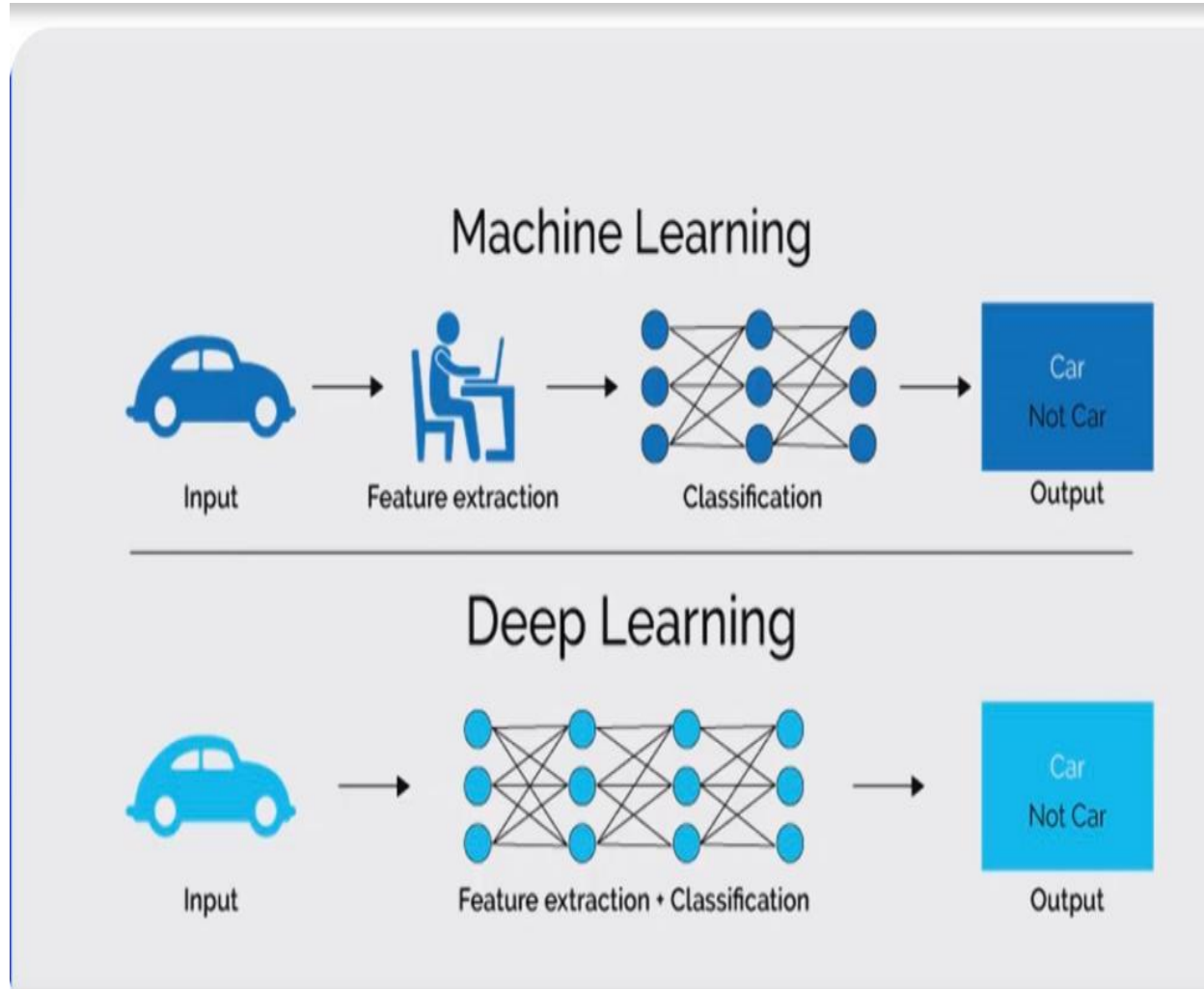
The first decentralized blockchain was conceptualized by a person (or group of people) known as Satoshi Nakamoto in 2008.

Nakamoto published a white paper on the cryptography mailing list at metzdowd.com describing a digital cryptocurrency titled "Bitcoin: A Peer-to-Peer Electronic Cash System"
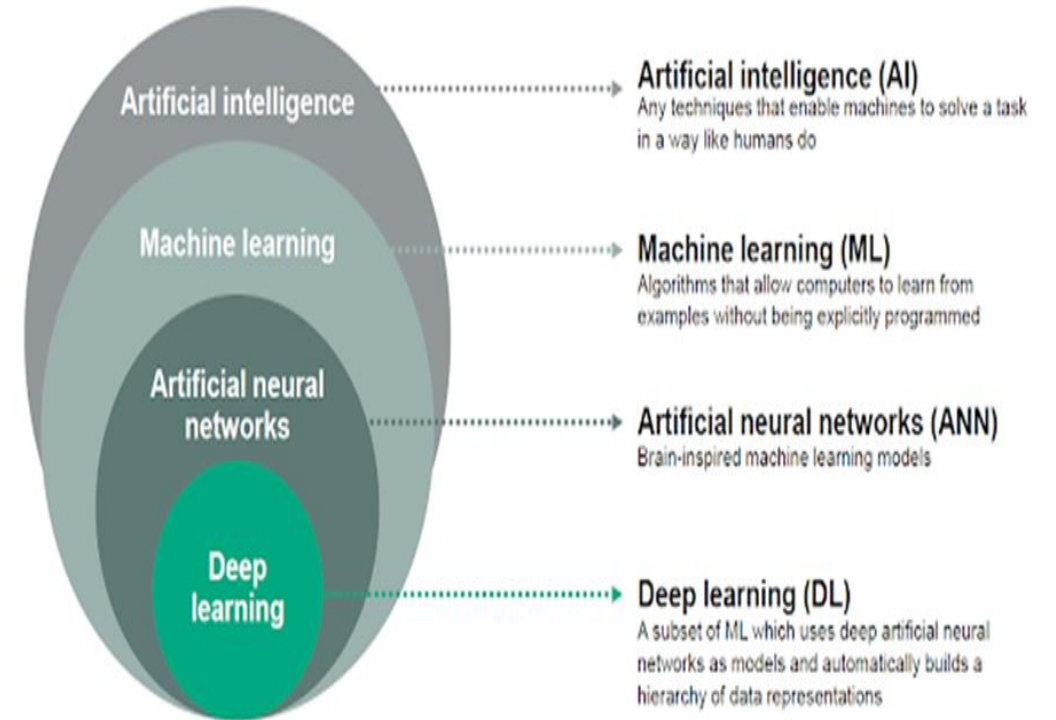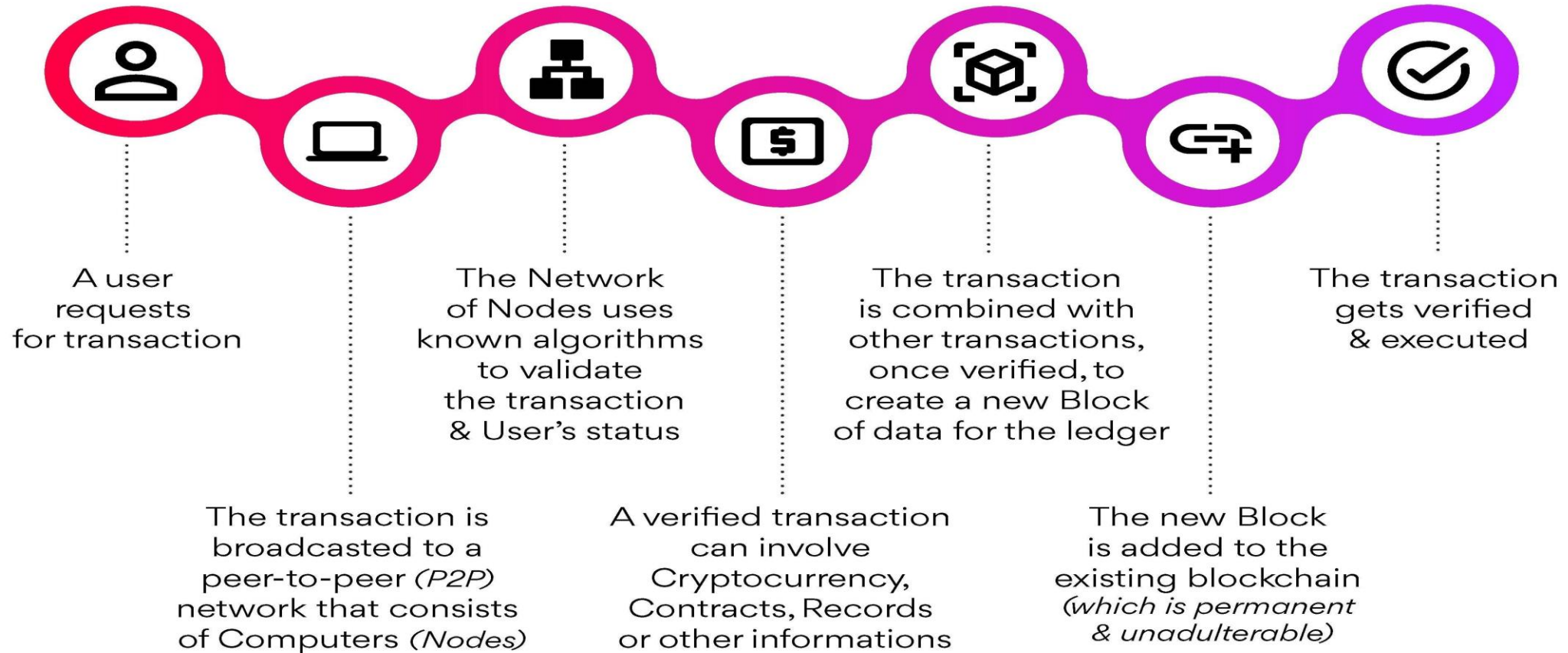

Satoshi Nakamoto

AI-ML-DL

How Blockchain technology works?

How Blockchain Technology Works?

A user requests for transaction

The transaction is broadcasted to a peer-to-peer (P2P) network that consists of Computers (Nodes)

The Network of Nodes uses known algorithms to validate the transaction & User's status

A verified transaction can involve Cryptocurrency, Contracts, Records or other informations

The transaction is combined with other transactions, once verified, to create a new Block of data for the ledger

The new Block is added to the existing blockchain (which is permanent & unadulterable)

The transaction gets verified & executed

The Yin and Yang of Digital Revolution

- Artificial Intelligence (Yin)

- Blockchain (Yang)

- Probabilistic Computation

- Inherently deterministic

- Constantly analyzing and updating the system

- A cohesive network based on a constant process

- Algorithms formulated for assessing (and simulating) reality

- A network to monitor and record the reality

The above comparison reflects the contradictory nature of AI and Blockchain. However, by bringing these two technologies together, you can develop apps that can disrupt conventional operating methods. This exciting prospect is called DAO: Decentralized Autonomous Organization. (Web 3.0)

AI + Blockchain = Decentralized AI

AI and Blockchain compared

The yin and the yang of AI and blockchain

Artificial intelligence ("yin")
- Probabilistic
- Changing
- Algorithms to guess at reality

Blockchains ("yang")
- Deterministic
- Permanent
- Algorithms and cryptography to record reality

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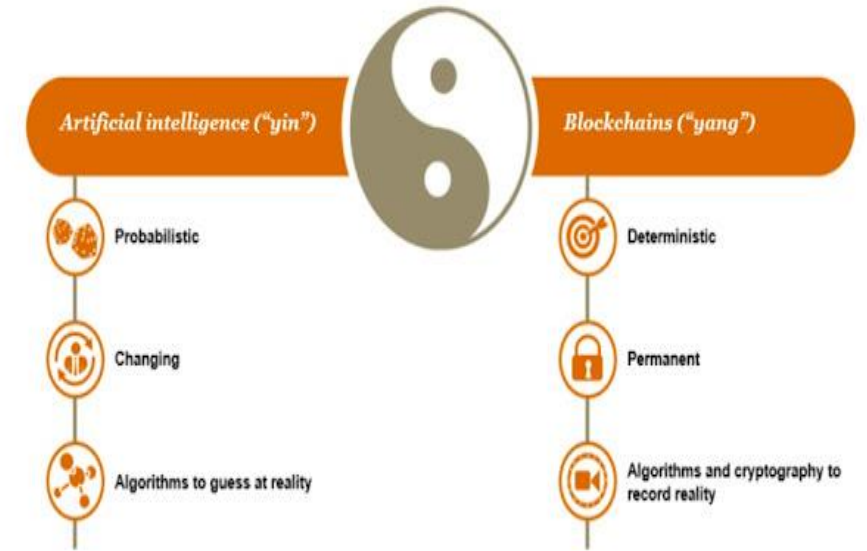
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There's light and dark, day and night, good and evil, yin and yang.
Yin and yang or yin-yang refers to a concept originating in ancient Chinese philosophy where opposite forces are seen as interconnected and counterbalancing.
It is commonly represented by the yin-yang symbol, a circle made up of black and white swirls, each containing a spot of the other.
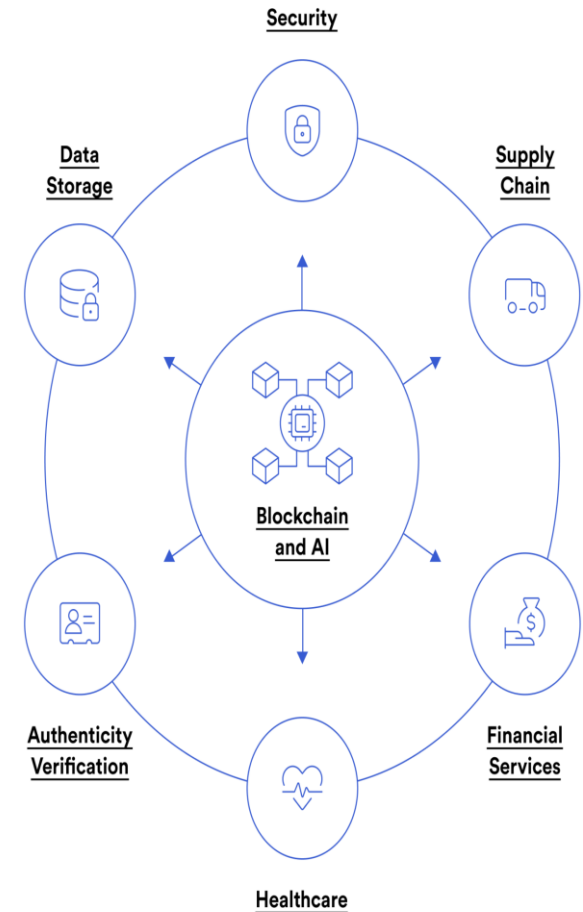
Combining AI and Blockchain

- The combination of blockchain and AI can produce intelligent automated decision-making systems that provide highly reliable outputs that trigger specific real-world outcomes based on immutable, tamper-proof data.

- The integration of blockchain and AI will
  - Unlock entirely new business models
  - Create operational efficiencies for organizations
  - Help automate repetitive tasks for individuals
  - Enable more secure and efficient data exchange
  - Enhance decision-making processes through AI-driven smart contracts
  - Improve overall trust and transparency in key infrastructure and economic processes.

- By combining AI-driven predictive analytics with blockchains, one can gain better insights into
  - demand patterns
  - Optimization (say inventory management)
  - Intelligent data-driven decisions to minimize costs

- By combining the powerful analytical capabilities of AI with the secure, decentralized nature of blockchains, the technologies could be applied to areas such as
  - Education, healthcare, energy, Inventory management, Asset management, agriculture, urban planning etc.
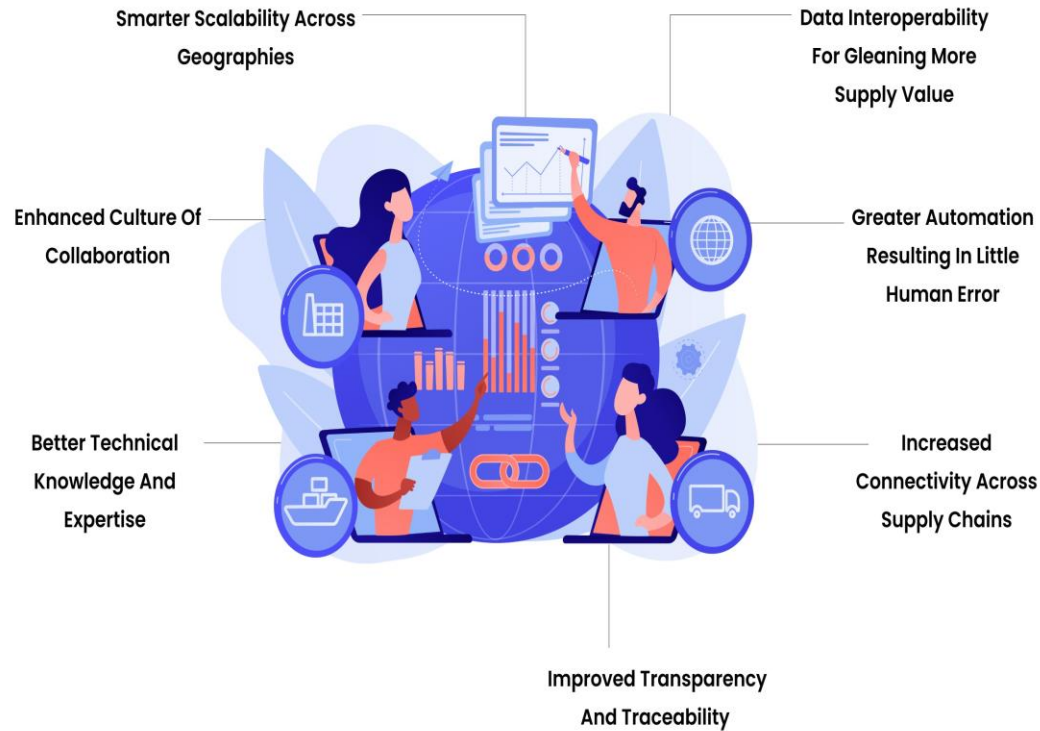
AI empowering Blockchain Applications

The combination of AI and blockchain has the potential to create innovative solutions across various industries, revolutionizing processes, enhancing security, and enabling new levels of efficiency and trust. Few areas of such influence listed here:

- **Smart Contracts**

- **Data Analysis**

- **Security and Fraud Detection**

- **Privacy and Confidentiality**

- **Consensus Mechanisms**

- **Supply Chain Management**

- **Decentralized Autonomous Organizations (DAOs)**

A case study on Supply Chain Management

7 benefits of adopting AI and Blockchain in supply chain

- Smarter Scalability Across Geographies
- Data Interoperability For Gleaning More Supply Value
- Enhanced Culture Of Collaboration
- Greater Automation Resulting In Little Human Error
- Better Technical Knowledge And Expertise
- Increased Connectivity Across Supply Chains
- Improved Transparency And Traceability

Intuz

- AI models incorporated into **smart contracts** could utilize specific predetermined conditions to execute tasks: Say Detecting the need for additional inventory and executing the order with an external supplier.
- The combination of blockchain and AI could also **improve transparency** and reduce the potential impact of fraud and by enabling the real-time tracking of goods from production to delivery.
- By combining AI-driven **predictive analytics** with blockchains, companies can gain better insights into demand patterns, optimize inventory management, and make data-driven decisions to minimize costs.
- AI-driven analytics combined with blockchain-based supply chain tracking could help humanitarian organizations **optimize resource allocation** during natural

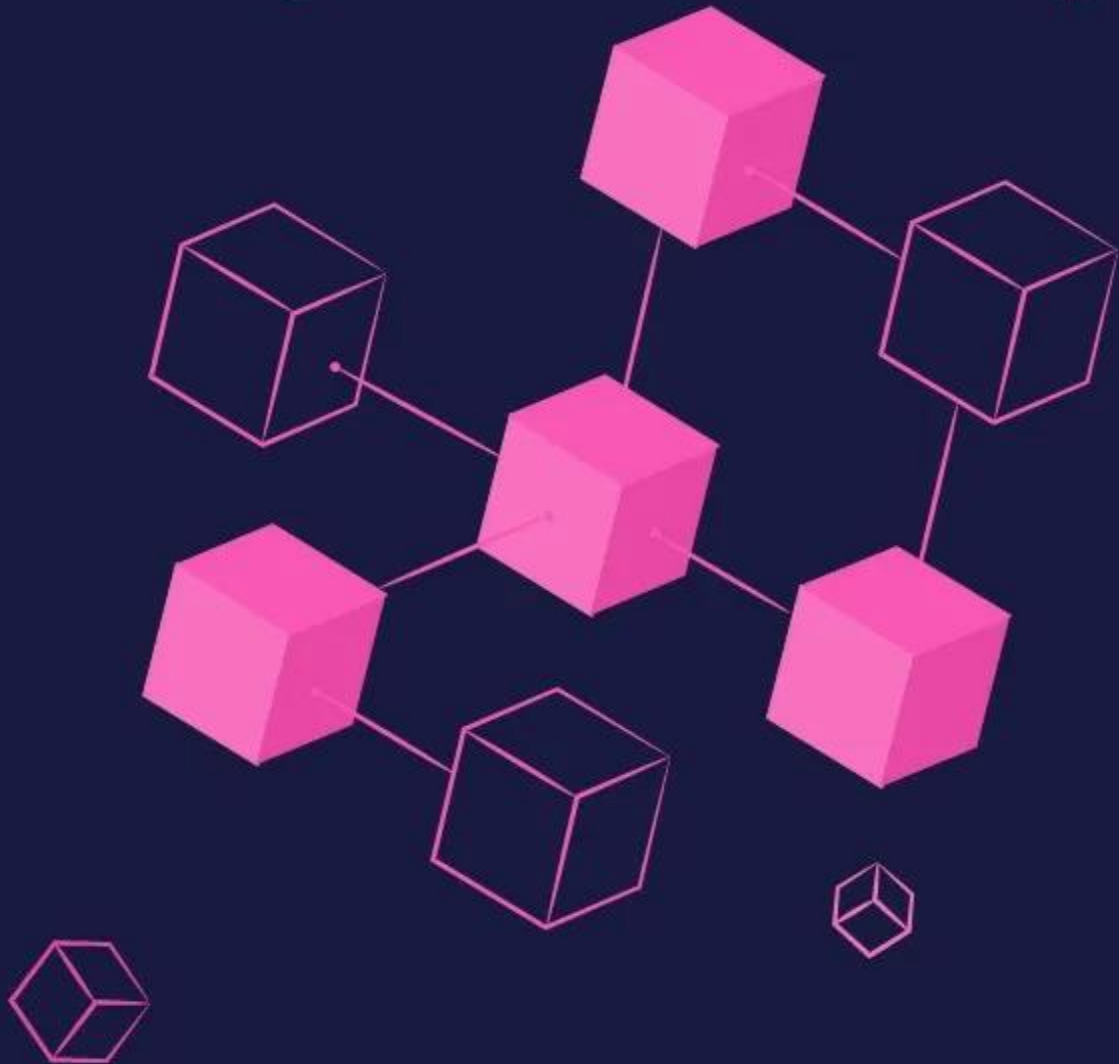# Challenges and Considerations for AI in Blockchain

- AI models traditionally have had a **data collection problem**, whereby they have to connect to distinct datasets from different parties.
- **Interoperability** between different blockchain networks and AI platforms is crucial for harnessing th
- e power of these technologies. Standards must be established to increase connectivity and ensure compatibility between the two technologies.
- **Data privacy** frameworks may need to be updated to accommodate the challenges posed by the integration of AI and blockchain to help uphold user privacy standards and maintain user trust.
- **Public awareness** is comparably low. Education focusing on the benefits, risks, and considerations associated with the convergence of AI and blockchain could help
- Once the synergies between **decentralized systems** and AI become more apparent, more AI systems could become equipped with cryptographic guardrails and more blockchain-based applications could be integrated with AI, helping to solve the trust issue for users

The Future of AI and Blockchain

- The potential for transforming various sectors by combining AI and blockchains is tremendous and this convergence is going to be strong together.

- As companies strive to automate tasks, boost productivity, and enhance their business offerings through a large portion of software products becoming impacted by AI, AI models are expected to continue to proliferate into different segments of the economy.

- Users are increasingly gravitating toward applications underpinned by cryptographic guarantees, requiring blockchain technology as the base.

- The convergence of these two technologies is set to influence how our societies and economies operate.

- AI empowered blockchain technology is an essential component of Web 3.0, enabling more intelligent, secure, and decentralized applications and services

- Metaverse can use effectively artificial intelligence and blockchain technology to create a digital virtual world where one can safely and freely engage in social and economic activities that transcend the limits of the real world

- Generative AI has the potential to revolutionize blockchain applications by enabling enhanced content generation, network optimization, fraud detection, improved QoS, automated billing, and network monitoring.

- Human resource generation is an essential component to take benefit of this convergence of AI and Blockchain

Multifaceted Efforts in India

- National Strategy document on Blockchain towards enabling trusted digital platforms, December 2021, from MeitY, GoI

- National Strategy for Artificial Intelligence# AI for All, June, 2018, NITI Aayog, Govt of India

- CyberSec4AI, taskforce report under O/o PSA to GOI covering Cyber security for AI and AI for cyber security

- Creation of Centres of Excellence in AI and Blockchain (BC) technologies

- Research funding in the areas of AI and BC applications by MeitY, DST, DOT

- Industry and Start-up eco system catching up to provide solutions and products in the advanced technologies including AI and BC in different sectors of economy

- Academic courses are being offered at UG and PG level to generate human resources

- National Conferences/ Workshops/ Seminars are being organized

- Skills development certification programs are being offered

Thank You !

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